

Message

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**From:** Butler, Sonya (DNRE) [/O=MIGOV/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=BUTLERS2]  
**Sent:** 7/11/2011 1:05:31 PM  
**To:** Monosmith, Carrie (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=741532eaf7034061b99e374887aa548b-Monosmith Carrie]; Benzie, Richard (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9ec5ca50fffe4e9392405565b506bc37-Benzie Richard]  
**Subject:** FW: Meeting with Director  
**Attachments:** PowerPoint on project.pdf; 1 Final Report September 2009.pdf

FYI:

I have a meeting this afternoon (1:30 PM) with the Director and Liane to discuss the project below. The meeting was scheduled 2 weeks ago; however, I didn't receive details about it until Friday.

---

**From:** Brad Comment [mailto:brad@KindsvatterAssociates.com]  
**Sent:** Friday, July 08, 2011 9:35 AM  
**To:** Butler, Sonya (DNRE)  
**Subject:** Meeting with Director

Sonya,

I apologize that I am now getting you information regarding our meeting with Director Wyant on Monday with my client, the Genesee County Drain Commissioner Jeff Wright. The purpose of our meeting will be to discuss projects on the Drinking Water Revolving Fund for both Genesee County but also Karegnondi Water Authority.

Part of the discussion will be the hope of having The MDEQ endorsing the project and approving DWRF and other funding, because the project will, at long last, provide a water supply that will truly be reliable. One of the greatest problems for this area is that when the water supply from Detroit is interrupted, this area will experience water restrictions, boil water notices and the complete shutdown of our restaurants, hospitals and many area businesses.

My primary contact for information has been unavailable for the last two weeks, and I apologize for any inconvenience. If I am able to obtain any other information I will be happy to share it with you. I have attached a PowerPoint with general talking points as well as an Executive Summary from an Engineering Report which further discusses the project in comparison to the current system this region has for water.

Thank you for your patience.

Bradley Comment

Vice President of Government Affairs



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Kindsvatter & Associates, Inc. is a strategic initiative government relations and association management specialist firm with a seasoned professional staff whose primary goal is providing clients with business management services and legislative representation at the state and national level.

## Talking points on KWA

### Decision basis

- Reliability

Must have reliable, uninterrupted supply of wholesome water.

Multiple interruptions due to failures of power supply, pump stations and water main breaks on Detroit system – have resulted in Boil Water Notices that close hospitals, schools, and businesses.

- Creation of Jobs

This project will employ engineers, surveyors, equipment operators, carpenters, masons, iron workers, millwrights, electricians, concrete suppliers, laborers and a variety of other trades for several years. Will emphasize employment of local workers.

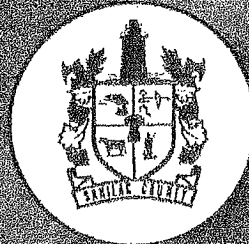
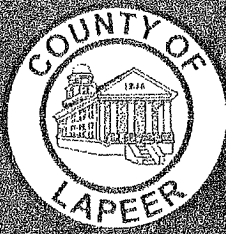
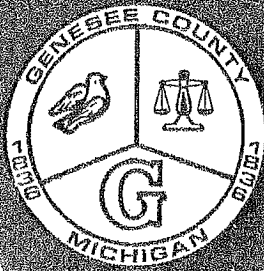
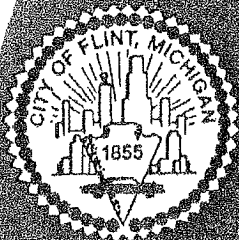
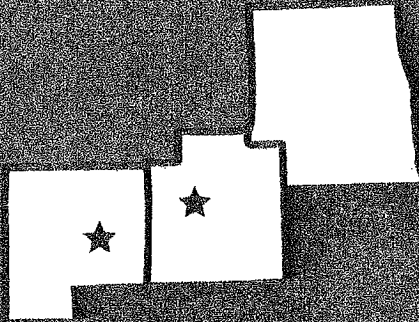
With employment of the local workforce there will be a positive impact for area businesses prepared to meet the needs of these tradespersons and professionals.

- Empowerment of the Region

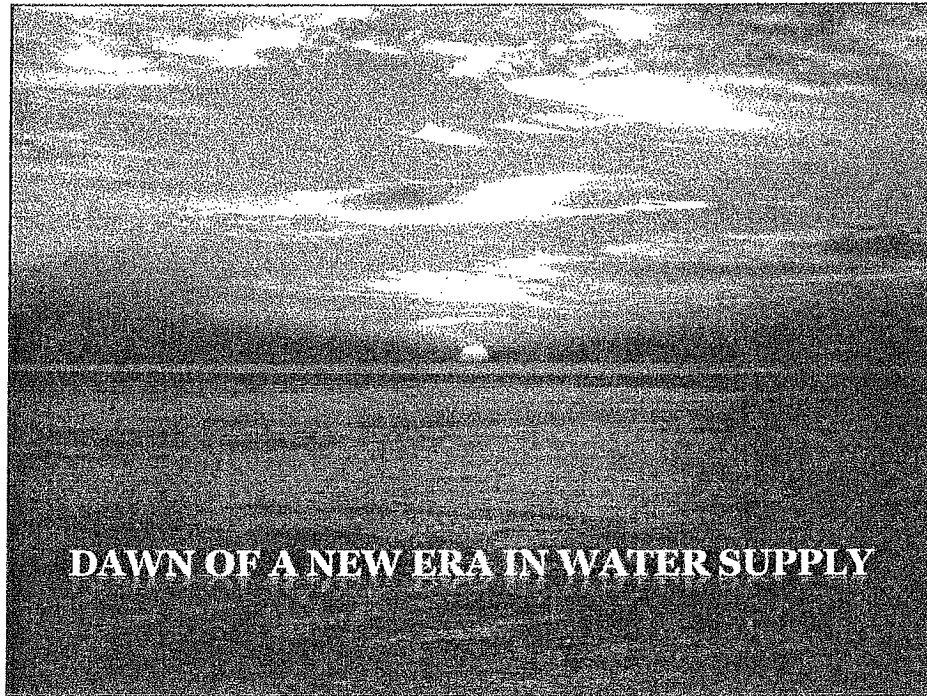
Local, elected officials will take responsibility for the production, delivery and the cost of water to all the businesses and residents that choose a public water supply. Ultimately, the people will have a voice in water supply matters.

- Ownership

The present water supply is not reliable. State officials are on record they are requiring redundancy and reliability. Detroit has already put into works a plan for a second pipeline to the region. The water customers here must pay for that new system. Obviously a second pipeline will be built at a cost of hundreds of millions of dollars. We will pay for it whether it is built by KWA or Detroit. The difference is under KWA, we will build it with local labor, control it and OWN it.

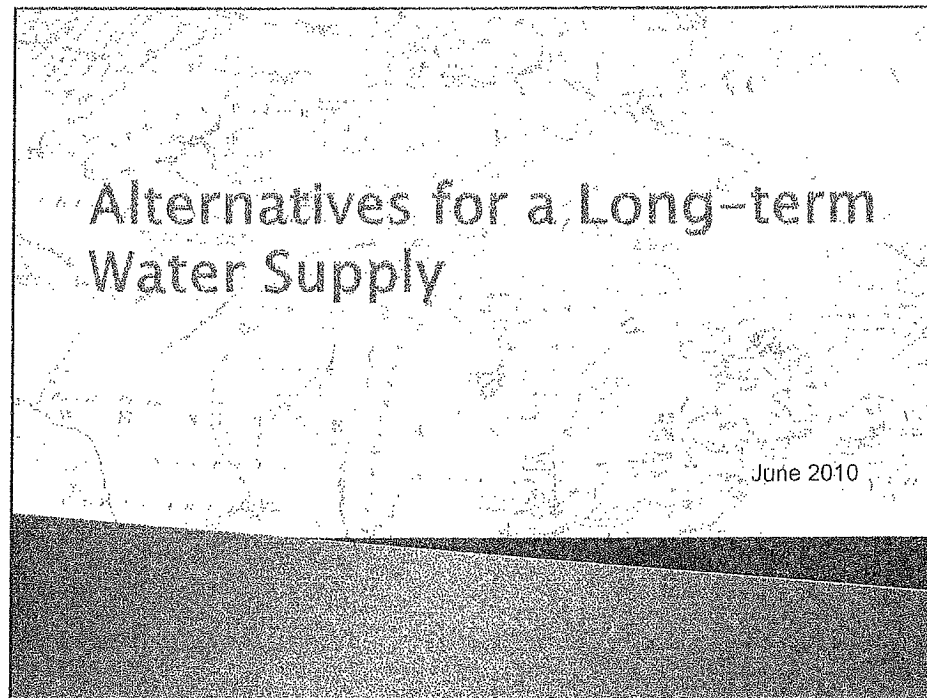


# Karegnondi Water Authority<sup>®</sup>



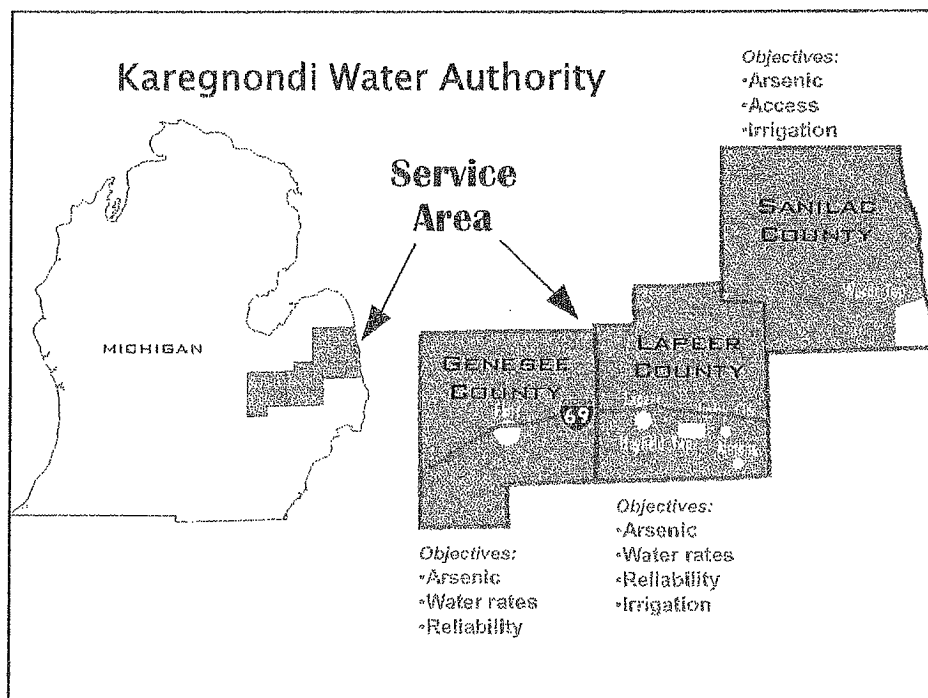
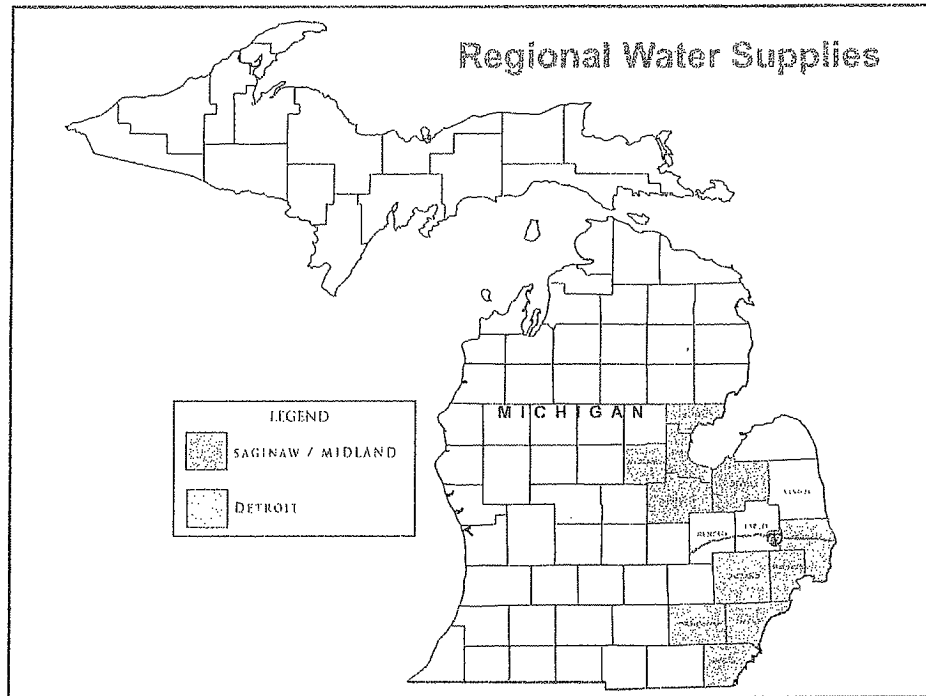
Karegnondi Water Authority

**Big Water  
Big Opportunity**



## Water Supply Alternatives:

1. New Long Term (30 year)  
Contract with Detroit (DWSD)
2. New Regional Water Authority  
along I-69 Corridor –  
“Karegnondi Water Authority”  
(KWA)



## Criteria Used for Analysis of Alternatives

- Reliability/Security/Quality
- Quantity/Growth Potential
- Cost Effectiveness
- Local Accountability

## Viable Water Supply Alternatives

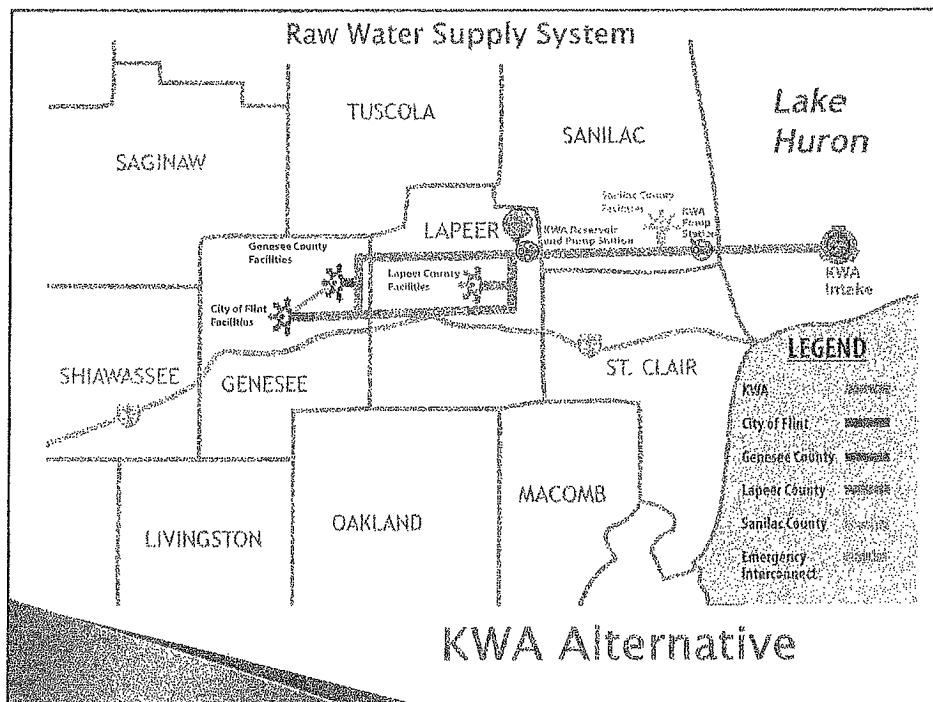
- Alternative No. 1 – DWSD Alternative  
Continuing Supply from Detroit  
(new 30 year contract)
- Alternative No. 2 – KWA Alternative  
New Lake Huron Raw Water Supply  
(new regional water authority, KWA)

*"Karegnondi Water Authority"*



## KWA Alternative: New Raw Water Supply

- KWA Service Area
  - Sanilac County
  - Lapeer County
  - Genesee County
  
- Genesee County owns 230 acres on Lake Huron







## KWA Alternative: New Raw Water Supply

- Regional Reliability
  - Reservoirs and dual pipelines
  - Redundant Equipment
  - System Interconnects
- Local Control
  - Treatment standards
  - Water supply & delivery to customers
  - Local accountability for rates

## DWSD Alternative: Proposed System Improvements

- New Flint Transmission Pipeline
- North Oakland County Transmission Pipeline

## The Detroit News

Wednesday, September 8, 2009

11/10/2009

State Edition

### Detroit Water to expand pipeline

Waterworks in Flint County, Mich., will expand its pipeline to serve the city of Detroit.

Flint County, Mich., is a large water utility that serves the city of Detroit. The county is currently expanding its pipeline to serve the city of Detroit. The expansion is part of a larger project to improve the water supply for the city. The project is expected to be completed by the end of the year.

#### Water

Flint County, Mich.

The expansion is part of a larger project to improve the water supply for the city.

The project is expected to be completed by the end of the year.

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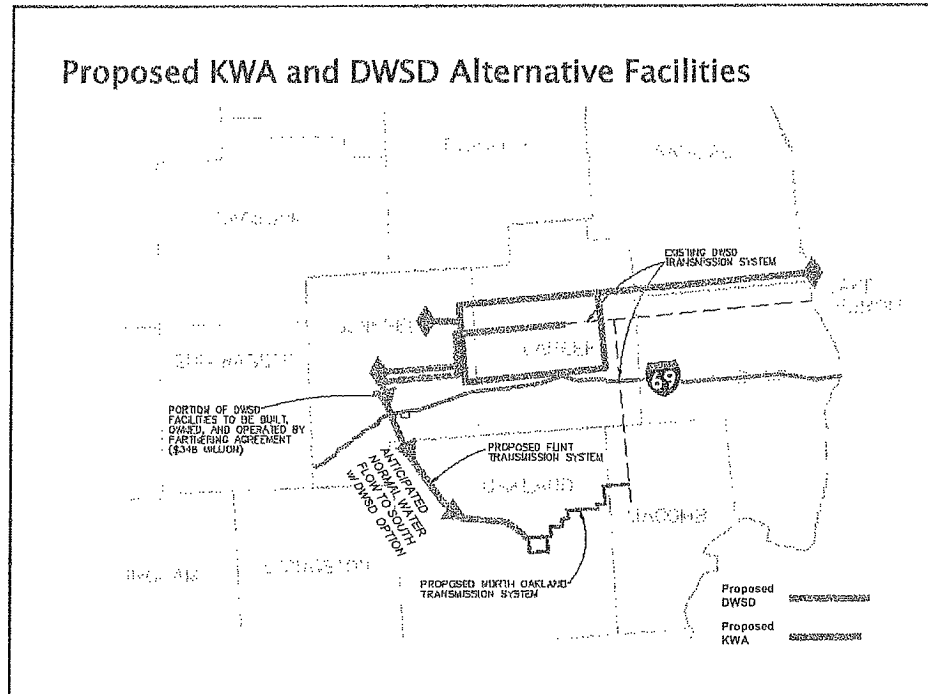
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## “A Pipeline will be built.... but, by Who?”

- Both Alternatives provide:
  - Reliability
  - Quantity and Quality
  - Security
- Economic Differences of Alternatives:
  - Control
  - Accountability
  - Rates

## Comparison of Alternatives

### ➤ KWA Alternative

#### ○ Total Estimated Project Costs

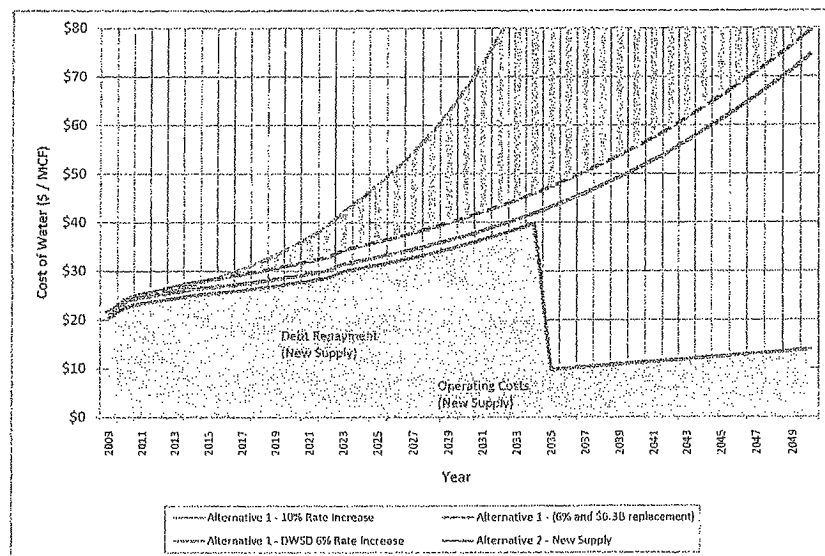
○ Genesee County	\$291 million
○ City of Flint	\$175 million
○ Lapeer County	\$126 million
○ Sanilac County	\$3 million

**=\$605 million**

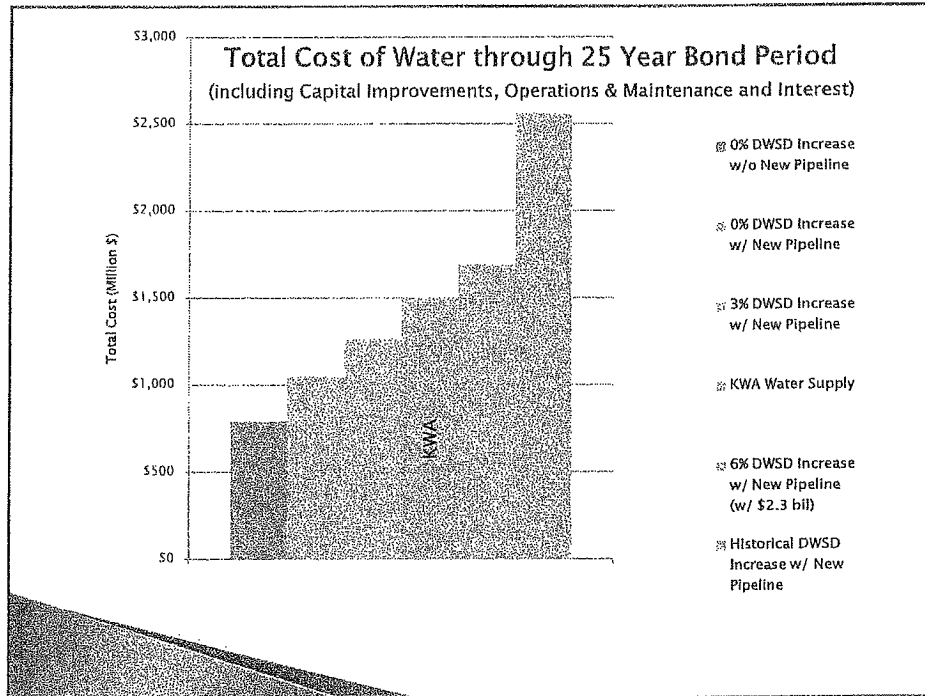
### ➤ DWSD Alternative

- Estimated Costs of Improvements for DWSD Master Plan, including Flint Transmission and North Oakland Transmission

**=\$2.1 billion**

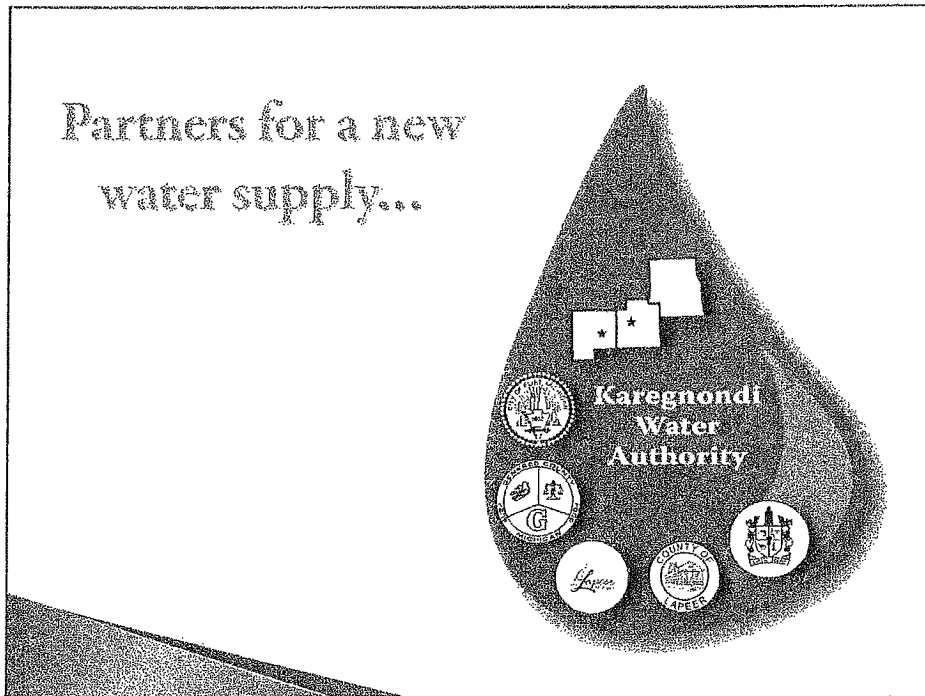


**Cost Comparison Chart**



So....where are  
we today?

- State Water Withdrawal Permit  
✓ Obtained
- State/Corp of Engineers boring Permit  
✓ Obtained
- KWA Articles and By-Laws  
✓ Completed
- Next steps?



## "Blue Economy"

AECOM

Flint & Genesee County Comprehensive Economic Development Strategy (CEDS)

Production  
Green Technology  
Only at 100  
State of Michigan  
Genesee County Comprehensive Economic Development Strategy  
CEDS Economic Development Strategy

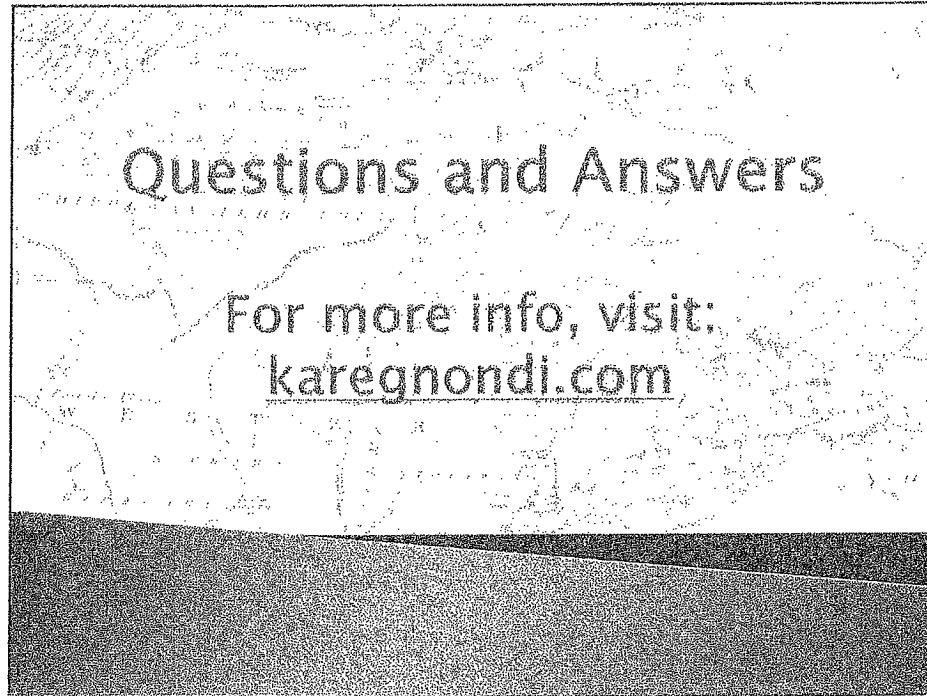
**NATIONAL GEOGRAPHIC**  
A SPECIAL ISSUE  
**Water**  
OUR THIRSTY WORLD

Can we shape the economic future of our Region?

- Water Intensive Industries
- Green Technologies
- Agricultural Opportunities
  - ✓ Production
  - ✓ Processing

200 R. R. Anderson  
Sustainable Water Works  
Charles Freeman  
Project Incentive  
December 7, 2009

Systemic Water

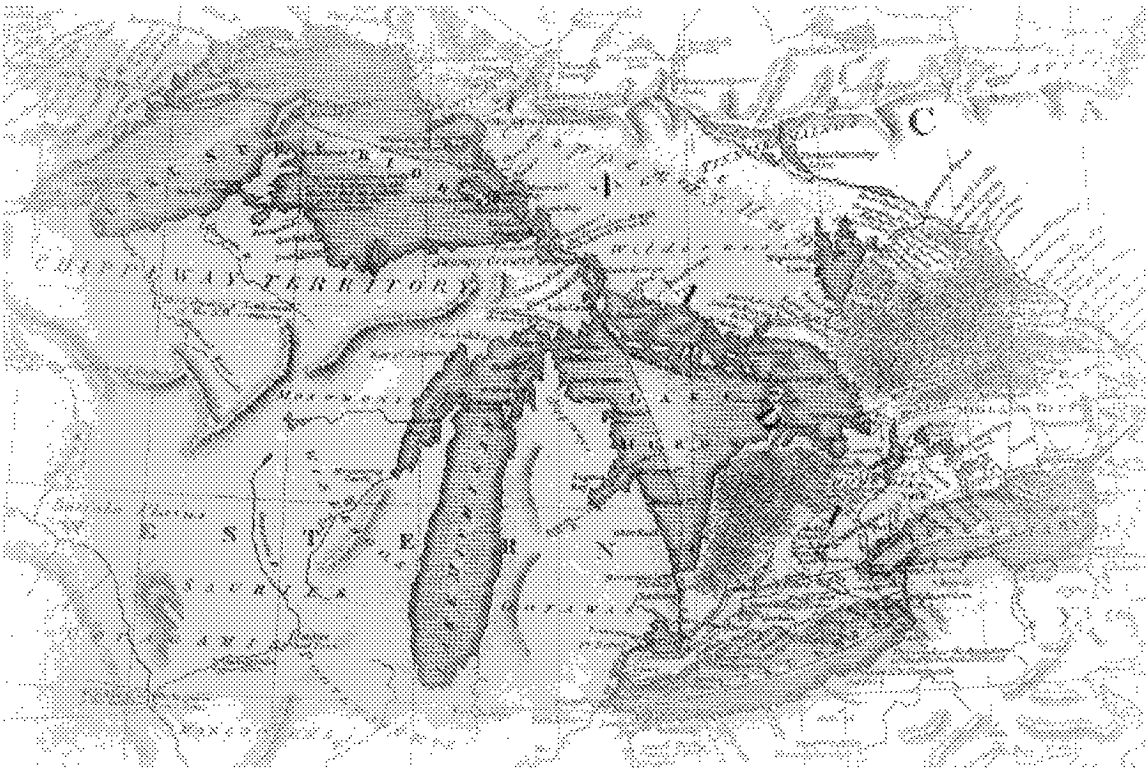


# PRELIMINARY ENGINEERING REPORT

# LAKE HURON WATER SUPPLY

# KAREGNONDI WATER AUTHORITY

SEPTEMBER 2009



**Prepared by:**

AECOM  
Jones & Henry Engineers, LTD  
Lockwood, Andrews and Newnam, Inc.  
O'Malia Consulting  
ROWE Professional Services Company  
Wade Trim, Inc.

**Member Communities:**

City of Flint  
Genesee County  
Lapeer County  
Sanilac County

# **Preliminary Engineering Report**

## **Lake Huron Water Supply Karegnondi Water Authority**

**September 2009**

### **Member Communities:**

**City of Flint  
Genesee County  
Lapeer County  
Sanilac County**

### **Prepared By:**

**AECOM  
Gannett Fleming, Inc.  
Jones and Henry Engineers, Ltd.  
Lockwood, Andrews, and Newnam, Inc.  
O'Malia Consulting  
ROWE Professional Services Company  
Wade Trim, Inc.**



## Study Participants

This study of a new water supply has been developed for the following governmental units and agencies.

### City of Flint

### Genesee County

Genesee County Drain Commissioner – Division of Water and Waste Services

- City of Burton
- Clayton Township
- City of Clio
- Davison Township
- Flint Township
- City of Flushing
- Flushing Township
- Gaines Township
- Genesee Township
- Grand Blanc Township
- City of Montrose
- Montrose Township
- City of Mt. Morris
- Mt. Morris Township
- Mundy Township
- Richfield Township
- City of Swartz Creek
- Thetford Township
- Vienna Township

### Lapeer County

Greater Lapeer County Utilities Authority

- Village of Almont
- City of Imlay City
- City of Lapeer
- Mayfield Township
- Almont Township\*
- Elba Township\*
- Goodland Township\*
- Imlay Township\*
- Lapeer Township\*
- Oregon Township\*

*\*Do not currently provide water supply*

### Sanilac County

- Worth Township
- Fremont Township
- Maple Valley Township
- Speaker Township

This report has been developed for planning purposes and considers data available through May 2009.

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## Executive Summary

### 1 Introduction

The City of Flint (Flint), the Genesee County Drain Commissioner – Division of Water and Waste Services (GCDC-WWS), and the Greater Lapeer County Utilities Authority (GLCUA) are supplied water from the City of Detroit's Water and Sewerage Department (DWSD). Because of growing concerns regarding the reliability and cost of the DWSD supply, Flint, GCDC-WWS, and GLCUA have considered alternatives for water supply. The first formal study was completed in 1992; the most recent was completed in 2006.

This study considers two alternatives from the 2006 study. One alternative is the continued purchase of water from DWSD; the other alternative is the development of a new water supply from Lake Huron.

Both alternatives include the construction of a new pipeline. DWSD is planning the construction of a new pipeline to Flint to address concerns regarding reliability and capacity. Water rates for either alternative will be increased similarly to recover the capital investment in new facilities.

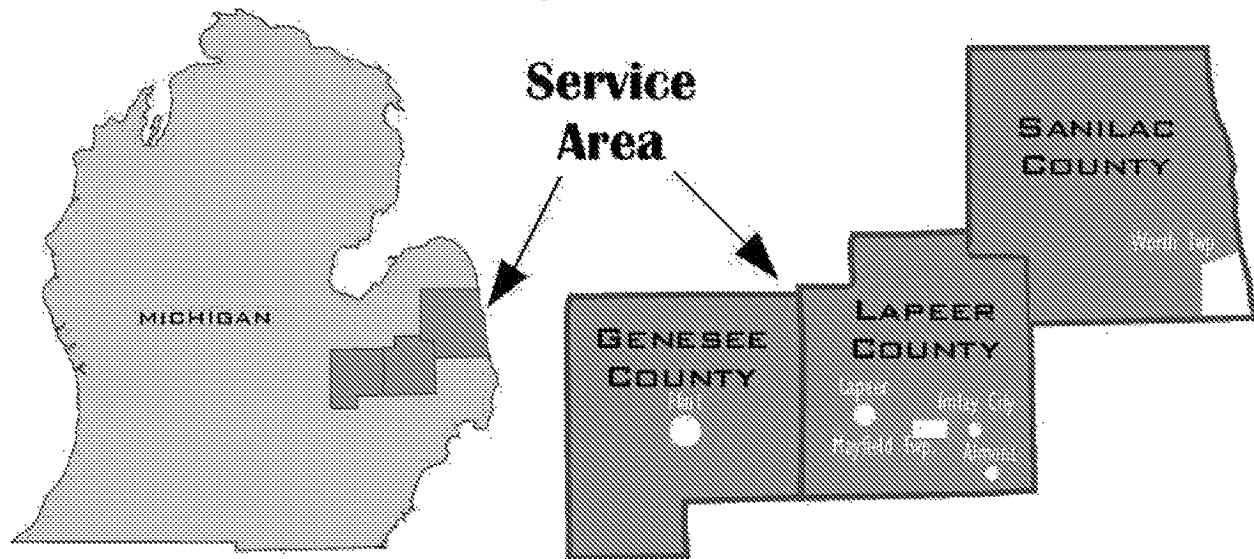
The second alternative, development of a new water supply from Lake Huron, provides the opportunity to supply water to additional communities. Sanilac County has joined Flint, GCDC-WWS, and GLCUA as participants in this study of water supply alternatives.

A new governmental authority, the Karegnondi Water Authority (KWA), is planned to develop and operate the new water supply. The KWA will be comprised of the communities supplied water.

### 2 Study Area

Figure 1 shows the study area.

Figure 1: Study Area



### 3 Demands

Table 1 shows the current and future (25 year) demands used for this study. Existing demands are based on records of recent water use; future demands have been developed from information provided by each community.

**Table 1: Demands for Planning**

	Initial (2014)		25 Year (2039)	
	Avg Day (mgd)	Max Day (mgd)	Avg Day (mgd)	Max Day (mgd)
Genesee County	14.2	25.0	16.2	32.5
City of Flint	16.5	25.0	19.2	28.8
Lapeer County	2.5	3.8	9.0	14.8
Sanilac County	0.1	0.1	0.1	0.1
Total	33.3	53.9	44.5	76.2

### 4 Alternative 1- Continued Supply by DWSD

Several options for continued DWSD supply to Flint, GCDC-WWS, and GLCUA have been discussed with DWSD representatives; however, there have been no formal negotiations or agreement regarding any particular option. Four options have been evaluated based on these discussions. Analysis indicates that the lowest cost option for continued supply from DWSD is a partnering arrangement with DWSD. This alternative is not available to Sanilac County.

With this option, a 30 year contract with DWSD for water service is required. Flint, GCDC-WWS, and GLCUA will be responsible to construct and operate a portion of the Flint Transmission System (FTS) which DWSD is planning to construct in 2010. By constructing and operating a portion of the FTS; water can be purchased by Flint, GCDC-WWS, and GLCUA at a lower rate.

DWSD estimates the portion of the FTS to be constructed by Flint, GCDC-WWS, and GLCUA at \$346,000,000. Operating costs are projected to be \$724,000 per year initially. In exchange for responsibility for the construction and operating costs; Flint, GCDC-WWS, and GLCUA will benefit by a 45% reduction in the purchase price of water from DWSD. Table 2 shows the cost of water for this option in 2011-2012, the year in which construction of the FTS is planned to be completed. The current water rate (2009-2010) is shown for comparison.

**Table 2: Comparison of DWSD Cost of Water, Now and After Construction of FTS**

	Flint & GCDC-WWS (\$/MCF)	GLCUA (\$/MCF)
DWSD Commodity	\$8.70	\$9.30
FTS Capital	\$15.19	\$14.53
Macomb Capital *	\$0.00	\$0.00
FTS O&M	\$0.46	\$0.46
Projected 2011-2012 Rate	\$24.35	\$24.29
2009-2010 Rate	\$14.32	\$16.11

\*Planned for 2024; no cost impact until then

## 5 Alternative 2 – New Lake Huron Water Supply

The 2006 study evaluated several options for a new water supply. The 2009 update focuses on one of the options, the alternative of delivering raw water from Lake Huron to participating communities for local treatment and distribution.

GCDC-WWS purchased 230 acres of property adjacent to Lake Huron in southern Sanilac County in 2002. An intake to draw water from Lake Huron and a pumping station are planned for this site. Raw water will be pumped through a pipeline to an inland reservoir.

Inland from the reservoir, pipelines supply treatment facilities for Flint, GCDC-WWS, and GLCUA. Treatment facilities for Sanilac County can be located along the pipeline route.

Treatment by microfiltration has been planned for Sanilac County and GLCUA. A new conventional treatment plant is planned for GCDC-WWS. It is planned that raw Lake Huron water is delivered for treatment to Flint's existing treatment plant.

The planned water system provides for twin pipelines, storage, backup equipment and processes to provide a reliable supply. Facilities have been planned with capacity for the 25 year demands shown in Table 1, and provisions for further expansion.

Figure 2 is a schematic showing the new water supply.

**Figure 2: Schematic Lake Huron Water Supply**

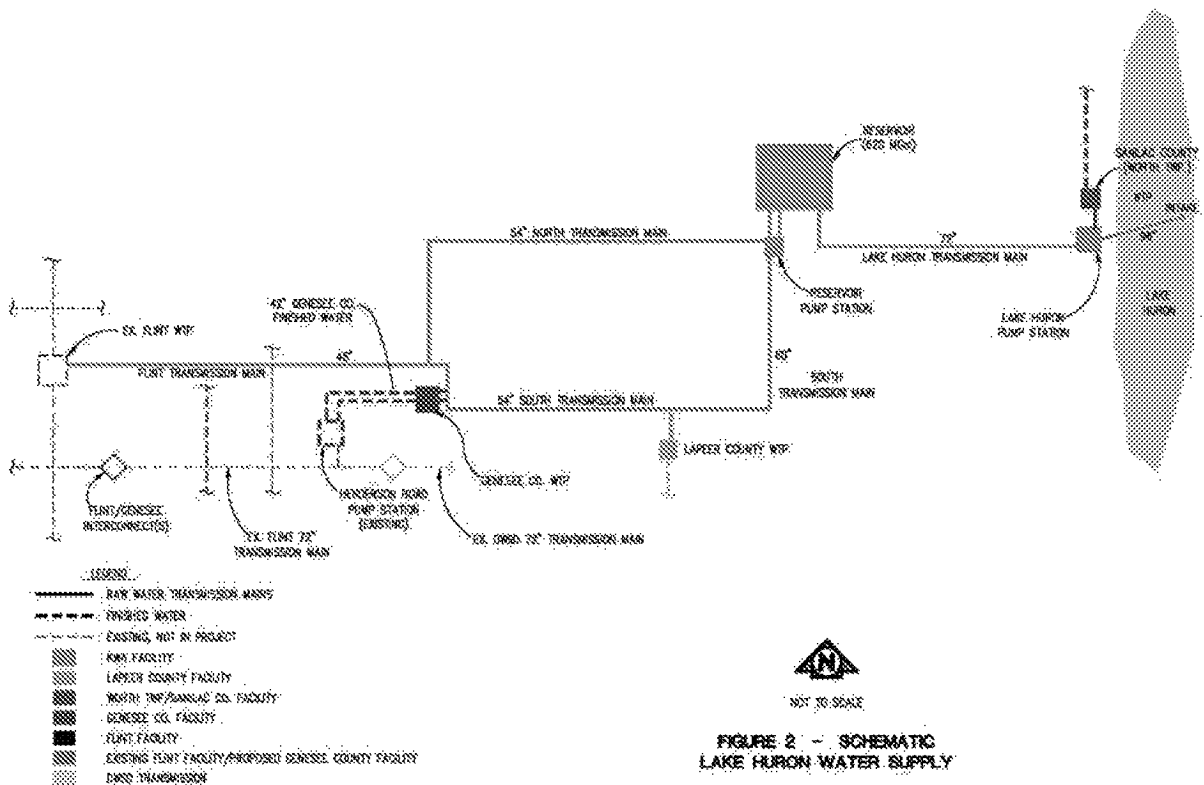


Table 3 summarizes the project cost of the new Lake Huron water supply which was studied.

**Table 3: Summary of Cost of New Lake Huron Water Supply**

Project Component	Total Project Cost	Sanilac Co. Share	Lapeer Co. Share	GCDC-WWS Share	Flint Share
KWA Lake Huron Water Supply	\$443,885,767	\$813,723	\$86,312,736	\$188,899,927	\$167,859,381
New Sanilac Co. Facilities	\$1,849,360	\$1,849,360			
New Lapeer Co. Facilities	\$40,009,060		\$40,009,060		
New Genesee Co. Facilities / Upgrades	\$110,038,554			\$110,038,554	
New Flint Upgrades	\$5,987,030				\$5,987,030
<b>Totals</b>	<b>\$601,769,771</b>	<b>\$2,663,083</b>	<b>\$126,321,796</b>	<b>\$298,938,481</b>	<b>\$173,846,411</b>

Table 4 shows the projected operating costs for the new Lake Huron water supply during the initial year of operation.

**Table 4: Project Operating Expenses during Initial Year of New Lake Huron Water Supply**

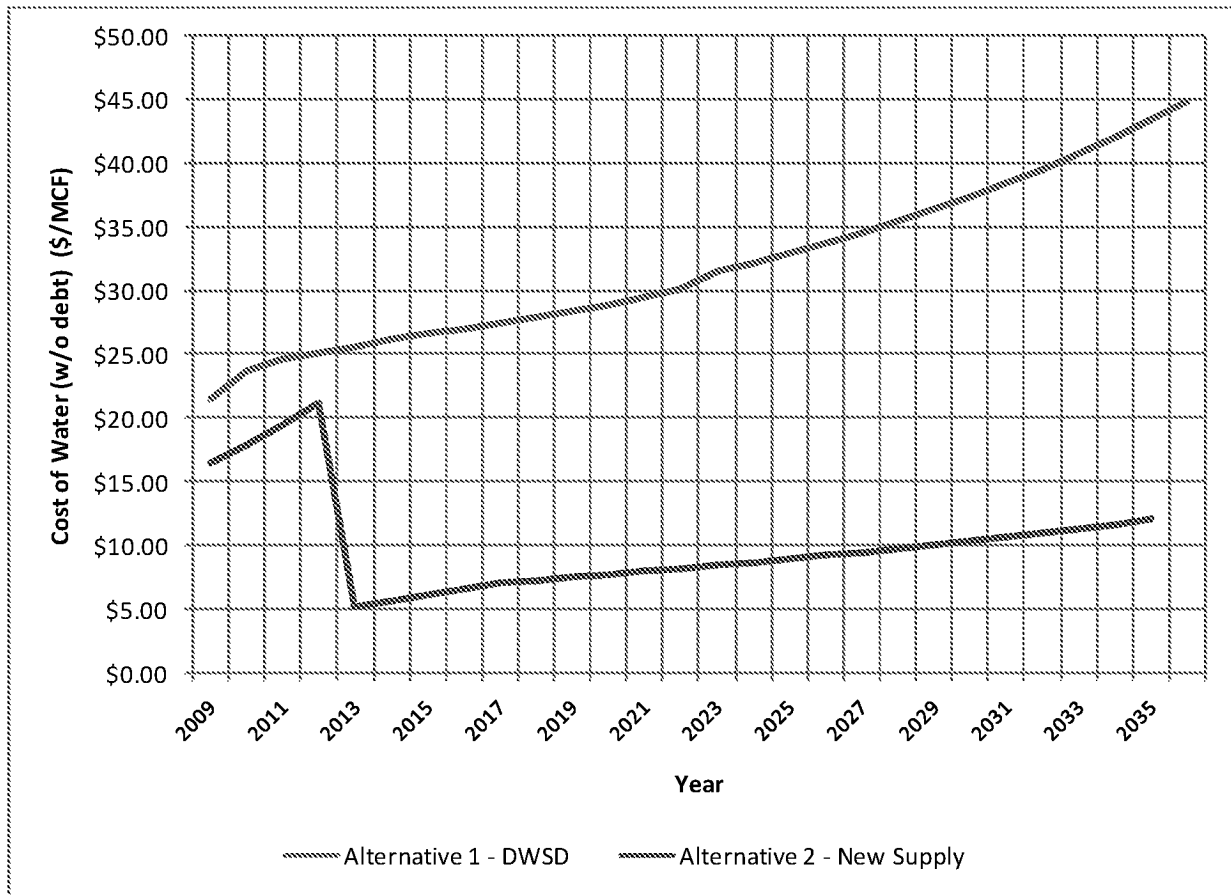
Community	KWA (\$/MCF)	Local (\$/MCF)	New Water Supply Treatment Cost (2014)	2009-2010 DWSD Rate
Sanilac County	\$1.30	\$41.56	\$42.86	N.A.
Lapeer County (GLCUA)	\$1.30	\$3.11	\$4.41	\$16.10
GCDC-WWS	\$1.30	\$2.86	\$4.16	\$14.32
City of Flint	\$1.30	\$4.13	\$5.43	\$14.32
<b>Notes</b> 1. New water supply costs based on projected annual consumption of each community in year 2014. 2. Costs do not include debt retirement or depreciation expense.				

## 6 Comparison of Alternatives

With the investments in facilities planned by DWSD, either of the alternatives considered are believed to provide a reliable, long-term water supply with sufficient capacity for the needs of the study area. Regardless of the alternative selected, a new pipeline and other facilities are planned for construction. As a result, the cost of water will increase with either alternative.

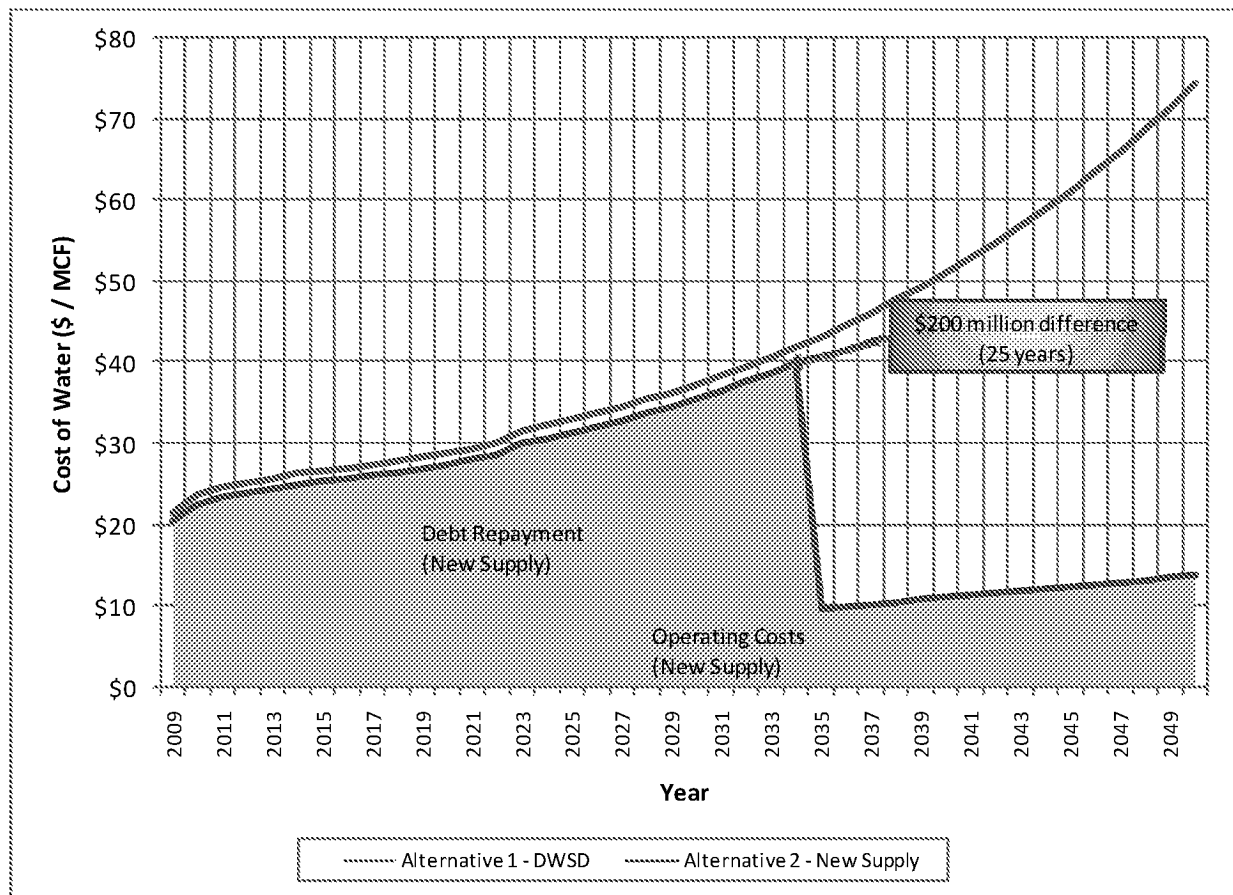
Figure 3 shows the projected cost of water for each alternative. For demonstration purposes, the cost of water for the new Lake Huron water supply alternative does not include the cost of repayment of debt incurred for its construction. The graph shows that without the debt of constructing the new system (or once the debt for its construction is repaid), the cost of water from the new supply will be substantially less than continuing to purchase water from DWSD.



**Figure 3: Projected Cost of Water**

The cost of water for the DWSD alternative was developed using the DWSD rate methodology for recovery of capital investment. For comparison, the cost of water for the new Lake Huron supply should include the cost of financing its construction.

If 25-year bonds are used for financing the construction of the new Lake Huron supply, analysis has shown that the cost of water for the new Lake Huron supply can be less than with continuing service from DWSD. Over the 25-year life of the bonds, the total cost of water with continued DWSD supply is projected to be \$200 million greater than with the new Lake Huron supply. Figure 4 demonstrates the cost savings resulting from new Lake Huron supply during the 25-year bond period

**Figure 4: Comparison of Alternatives**

# **Preliminary Engineering Report**

**Lake Huron Water Supply  
Karegnondi Water Authority**

**September 2009**

## Preliminary Report

### 1 Introduction

The City of Flint (Flint), the Genesee County Drain Commissioner Division of Water and Waste Services (GCDC-WWS), and the Greater Lapeer County Utility Authority (GLCUA) operate community water systems. The Detroit Water and Sewerage Department (DWSD) has supplied these utilities with water since the 1960s.

Because of growing concerns regarding the reliability and cost of the DWSD supply, these utilities have studied other supply alternatives. The first formal study was completed in 1992; a 2006 study evaluated several alternatives for a long-term water supply.

This study focuses on two of the alternatives considered in the 2006 study. One alternative considers the impact of remaining customers of DWSD; the second alternative evaluates the feasibility of developing a new Lake Huron water supply.

DWSD is planning significant capital investments to address concerns with reliability and to provide sufficient capacity to meet the needs of their customers. The cost of planned facility improvements will be added to future rate increases to all customers. If DWSD continues to supply Flint, GCDC-WWS, and GLCUA; it is expected that their future rate increases will be greater than other DWSD customers because of the methodology for used for determining the cost of water. This study compares different options for remaining a customer of DWSD and uses DWSD's established rate structure to project the future cost of water.

The alternative studied for a new Lake Huron water supply can provide water supply on a regional basis, providing the potential for service to additional communities. As a result of this potential; Sanilac County is included as a participant in this study along with Flint, GCDC-WWS, and Lapeer County. This study develops the conceptual design of a new water supply to allow for estimates of the costs for its construction and operation for comparison with the alternative of continuing supply by DWSD.

A new governmental authority, the Karegnondi Water Authority (KWA), is planned to be established to develop and operate the new water supply. The KWA will include the communities supplied by the new water supply.

### 2 Scope

The alternatives for long term water supply are evaluated on the following criteria:

- Reliability – A new supply shall be planned with redundancy and backup provisions to maintain a continuous, safe supply of drinking water to customers.
- Cost – The concept studied shall be planned in sufficient detail to reasonably develop opinions of construction and operating costs, to allow for its comparison with existing water supplies.
- Quality – A new supply shall be planned with suitable provisions so drinking water will meet all current and anticipated regulations, and will consistently be of equal or better quality than current supplies.
- Quantity – The water supply shall be designed with sufficient capacity and provisions for expansion to meet the needs of the service area throughout the planning period.

- Security – Planned facilities shall have suitable provisions and measures to guard against disruption of service or contamination resulting from vandalism or malevolent activities.

The alternative of continuing supply from DWSD is developed using their current rate methodology and planned improvements to their facilities. This report provides an overview of the options for continued service by DWSD; Appendix 18 provides a detailed analysis.

The alternative of developing a new water supply for Flint, Genesee County, Lapeer County, and Sanilac County assumes that the KWA will develop and operate the new water supply, to deliver raw water from Lake Huron to each member community. Member communities will be responsible for local treatment and distribution of water to their customers.

The concept for a new water supply is developed through a series of technical memoranda that serve the following purposes.

- a. Determine the facilities, processes, and capacities required to supply the proposed service area.
- b. Establish budgets for construction and ongoing operating and maintenance (O&M)
- c. Evaluate constructability (permitting, environmental concerns, right-of-way requirements).
- d. Develop schedules for implementation.

This report provides an overview of the study undertaken to develop a new Lake Huron water supply. Details are provided in the technical memoranda as appendices to this report.

### **3 Planning Criteria**

#### ***3.1 Criteria for Continued DWSD Supply Options***

The following criteria were used to evaluate the alternative of remaining a customer of DWSD.

- Planning Period: 25 years
- Economics: Financing for DWSD capital improvements: 30-year bonds at 5% rate

#### ***3.2 Criteria for New Lake Huron Supply Option***

Engineers and planners used the following criteria for the study and evaluation of a new Lake Huron water supply.

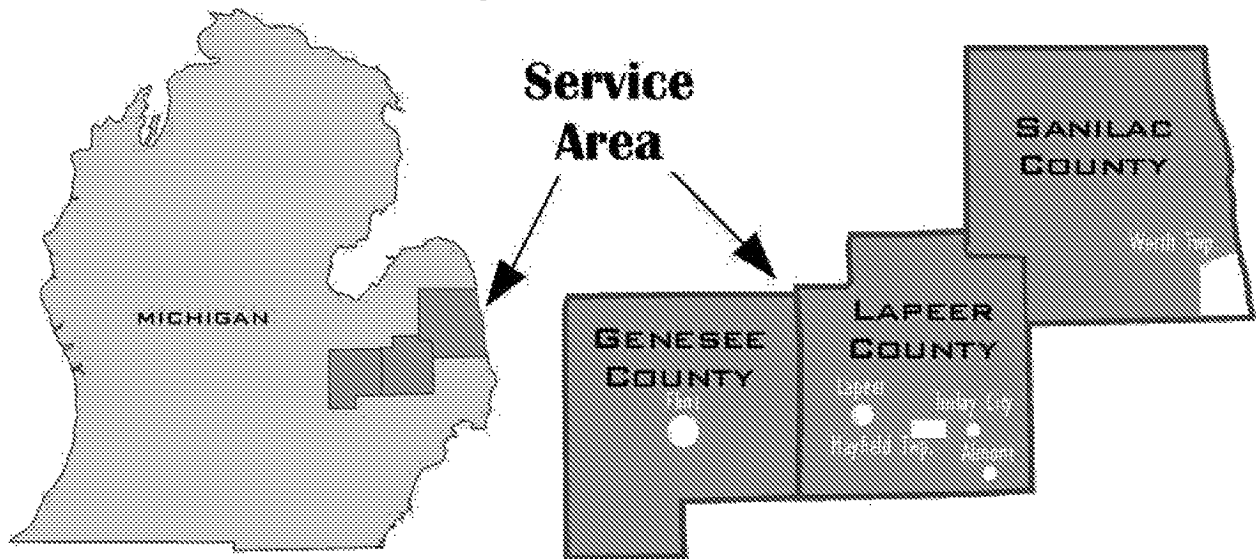
- Planning Period: Proposed facilities are planned to meet the projected 25-year needs, at a minimum, with provisions for future expansion.
- Design Capacity: Proposed water supply is planned with capacity adequate for maximum day demand (MDD); peak demands are assumed to be met through local storage.
- Economics:  
Based on the following assumptions:
  - Inflation Rate during Planning Period: 3% annually
  - Financing: 25-year bonds at 6% rate
  - Capitalized Interest: not included
- Engineer's Opinion of Construction Costs:
  - ENR Construction Cost Index: 8688
  - Construction Contingencies: 15% of construction cost

- Design Contingencies: 5% of construction cost
- Engineering, Legal, Bonds, and Administration: 17% of construction cost
- Land Acquisition Costs:
  - Easements: \$0.15 per square foot
  - Land (Purchase): \$6,000 per acre
- Operating and Maintenance Costs
  - Depreciation:
    - Equal to installed cost of equipment and facilities divided by their expected service life. Depreciation expenses are considered constant throughout the study period. Services lives are assumed as follows:
      - Pipe: 75 years
      - Mechanical Equipment: 20 years
      - Physical Plant: 75 years
  - Power: assumed \$0.063 per kWh, in 2014 dollars
  - Labor
    - The following hourly rates are assumed, in 2014 dollars:
      - WTP Superintendent: \$35 per hour
      - Supervisor: \$30 per hour
      - Operators: \$20 per hour
      - Maintenance Mechanics: \$25 per hour
      - Mechanic's Helpers: \$20 per hour
      - Instrument Technicians: \$25 per hour
    - Fringe benefits add 62% to the preceding labor rates

#### 4 Study Area

The study area is considered to include Genesee County, Flint, Lapeer County, and Sanilac County. Figure 4-1 below illustrates the study area.

Figure 4-1: Study Area



The City of Flint provides water to residential, business, and institutional customers throughout the city. The city is fully developed and adjacent areas are supplied water by GCDC-WWS, resulting in little potential for expansion of its service area.

GCDC-WWS provides water to nineteen villages, cities, and townships located in Genesee County. There is potential for expanded water service within the nineteen communities now served plus growth potential by serving new communities, within or adjacent to Genesee County.

Most cities and villages in Lapeer County operate community water systems. The City of Lapeer, the City of Imlay City, the Village of Almont, and Mayfield Township are members of GLCUA and purchase water from DWSD for distribution to their water customers. Lapeer, Imlay City, and Almont supply water to businesses and residences throughout their municipal boundaries. Mayfield Township provides water service only to a limited area within the township. Six other townships are members of GLCUA; however, they do not currently provide water service to their communities. Other county municipalities, including Columbiaville, Dryden, Metamora, and North Branch operate community water systems which utilize wells for supply. For this study, the initial service area for the new Lake Huron Supply is assumed to be the GLCUA communities. There is potential for increased water demands through continued development within existing GLCUA service areas, expansion of service to new areas, and agricultural irrigation.

Sanilac County is predominantly rural, with 80% of the land used agriculturally. Most villages and cities in the county operate community water systems. Four of the five townships which border Lake Huron operate community water systems which supply only the properties near the lakeshore. The proposed supply pipeline from Lake Huron provides the ability to serve to other areas of the county. For this study, it is assumed that one township (Worth Township) receives water from the new Lake Huron supply. Studying the requirements for providing service to Worth Township provides guidance regarding the costs for supplying other Sanilac County communities.

## 5 Demands

Communities and agencies within the study area are presently supplied water from other sources. Engineers and planners have reviewed records of past water use to determine the initial demands of the proposed water supply. In addition, officials representing communities within the service area have provided guidance for projecting future water use. Table 5-1 below summarizes the demands used for this study.

**Table 5-1 Design Demands Used for Study**

	Initial (2014)		25 Year (2039)		50 Year (2064)	
	Avg Day (mgd)	Max Day (mgd)	Avg Day (mgd)	Max Day (mgd)	Avg Day (mgd)	Max Day (mgd)
GCDC-WWS	14.2	25.0	16.2	32.5	22.5	45.0
Flint	16.5	25.0	19.2	28.8	24.0	36.0
GLCUA	2.5	3.8	9.0	14.8	11.7	19.7
Sanilac County	0.1	0.1	0.1	0.1	0.1	0.2
Total	33.3	53.9	44.5	76.2	58.3	100.9

## 6 Alternative 1 - Continued Supply from DWSD

Flint, GCDC-WWS, and GLCUA are currently supplied water from DWSD. Flint and GLCUA have contracts with DWSD for water service. GCDC-WWS is supplied water from Flint as a second-tier customer. This section considers options for continued supply by DWSD.

Sanilac County is not currently supplied by DWSD. This alternative is not available for Sanilac County.

### *6.1 DWSD Rate Methodology*

DWSD establishes water rates for all of its customers through a uniform rate structure. The following variables are considered in the rate model:

- Annual average day flow
- Maximum day flow
- Peak hour flow
- Distance
- Elevation
- Meter size
- And combinations of the above

DWSD determines its cost to operate, maintain, and expand the water system on an annual basis. Costs are categorized regarding their impact by the preceding variables. Costs are combined with the variables established for each community and are used to compute the cost of water for each community annually.

DWSD indicates that rate increases are expected to average 7% through 2014, then 4% thereafter. These increases are considered the average of all DWSD customers. A review of historical records indicates that rate increases to Flint have averaged about 1% higher than the average of all suburban DWSD customers. Therefore, this study assumes increases of 8% through 2014 and 5% subsequently.

The geographical locations of Flint, GCDC-WWS, and GLCUA have a significant impact on their rates for water supply by DWSD. Historically, about 70% of the cost of water has been attributed to the “distance” and “elevation” components of the DWSD rate methodology.

DWSD is planning the construction of additional transmission facilities. Using the current rate methodology, the costs associated with the construction and operation of these facilities will be assigned to the “distance” and “elevation” categories. The cost of water to Flint, GCDC-WWS, and GLCUA are expected to increase more as DWSD adds these facilities.

### *6.2 Options for Continued DWSD Supply*

DWSD has developed a new “Master Agreement for Water Supply”. The new agreement provides a thirty year commitment for water supply and requires a commitment for purchase of a minimum volume of water each year. The agreement also provides customers the ability to specify the quantities and pressures of water to be supplied. The cost of water will be based upon the contracted quantities rather than historical demands. DWSD is not required to deliver water in



excess of the contracted quantity. Where demands are exceeded by a community, DWSD may increase the cost of water to the community based on the actual demands experienced.

DWSD is encouraging all suburban customers to adopt the new agreement to provide for better planning, uniformity between all customers and less fluctuation in rates from year to year. For customers that do not elect to execute the new master agreement, the existing supply agreements will continue to be used. Where the existing agreements remain in use, rates will be established based on historical demands plus a twenty percent allowance for potential future increases in peak demand.

Through preliminary meetings with DWSD, several concepts have been identified for Flint, GCDC-WWS, and GLCUA to remain customers of DWSD. Four of these concepts have been studied. These are summarized in the following sections and are discussed in detail in Appendix 18.

#### **6.2.1 Option 1 – No Change**

This option assumes that Flint and GLCUA continue to purchase water from DWSD based on their existing water supply contract. GCDC-WWS is assumed to continue to purchase water as a second tier customer from Flint.

It is assumed that future water rates are established on the basis of historical demands plus a 20% proxy. It is also assumed that DWSD constructs the planned upgrades to their transmission facilities and that the cost of construction and operation are incorporated into the future cost of water.

Figure 6.1 shows the projected cost of water for Flint and GCDC-WWS; Figure 6.2 shows the projected cost of water for GLCUA.

#### **6.2.2 Option 2 – Master Agreement (Current Demands, plus 5%)**

This alternative assumes that Flint, GCDC-WWS, and DWSD execute the new master agreement. It is assumed that the contracted volumes are equal to historical demands, plus a five percent increase to provide for some growth. It is also assumed that DWSD constructs planned upgrades to their transmission facilities and that the cost of construction and operation are incorporated into the future cost of water.

Figure 6.1 shows the projected cost of water for Flint and GCDC-WWS; Figure 6.2 shows the projected cost of water for GLCUA.

#### **6.2.3 Option 3 – Master Agreement (Future Demands)**

This alternative assumes that Flint, GCDC-WWS, and GLCUA execute the new master agreement. It is assumed that the contracted volumes are equal to the projected demands assumed in Section 5. It is also assumed that DWSD constructs planned upgrades to their transmission facilities and that the cost of construction and operation are incorporated into the future cost of water.

Figure 6.1 shows the projected cost of water for Flint and GCDC-WWS; Figure 6.2 shows the projected cost of water for GLCUA.

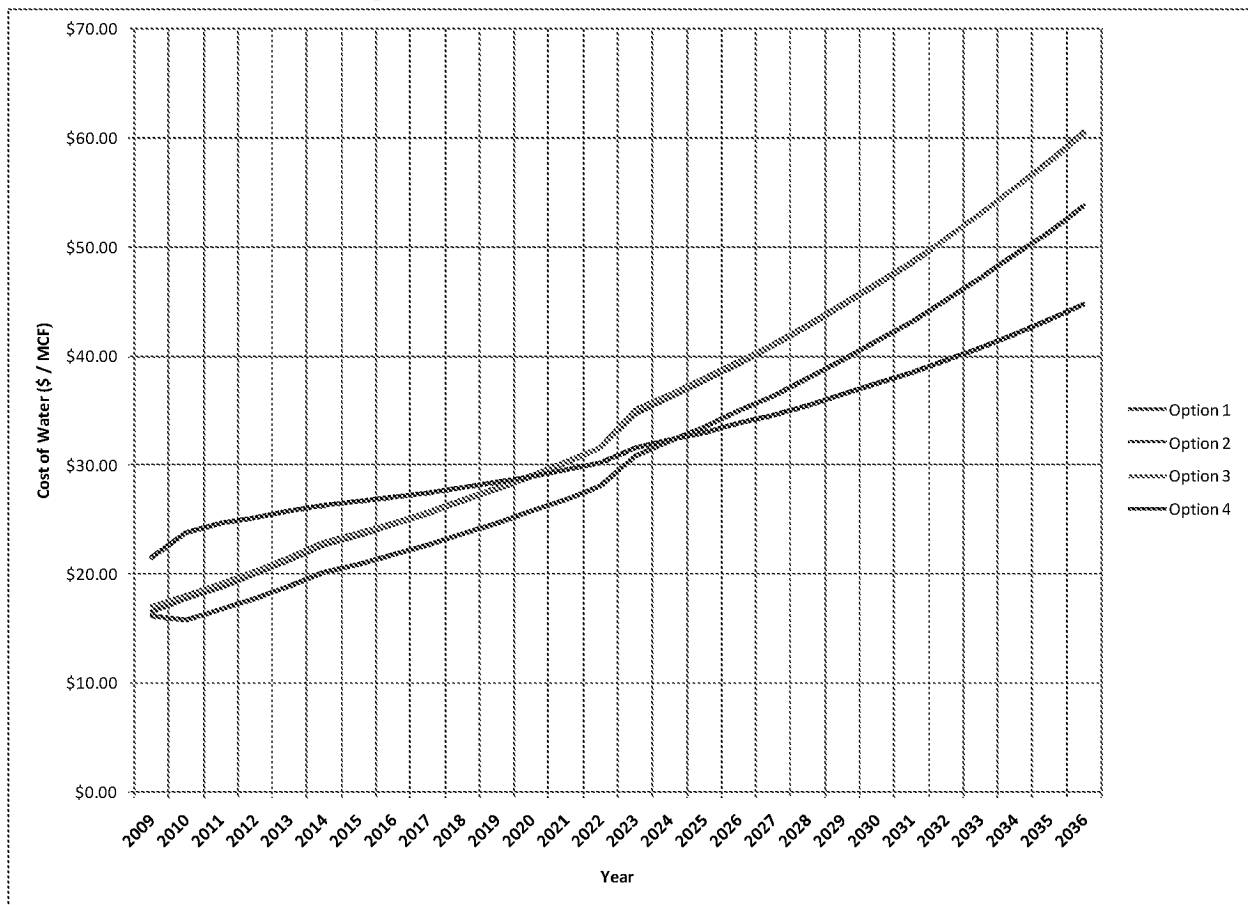
#### 6.2.4 Option 4 – Master Agreement (Partnering Arrangement with Capital Contribution)

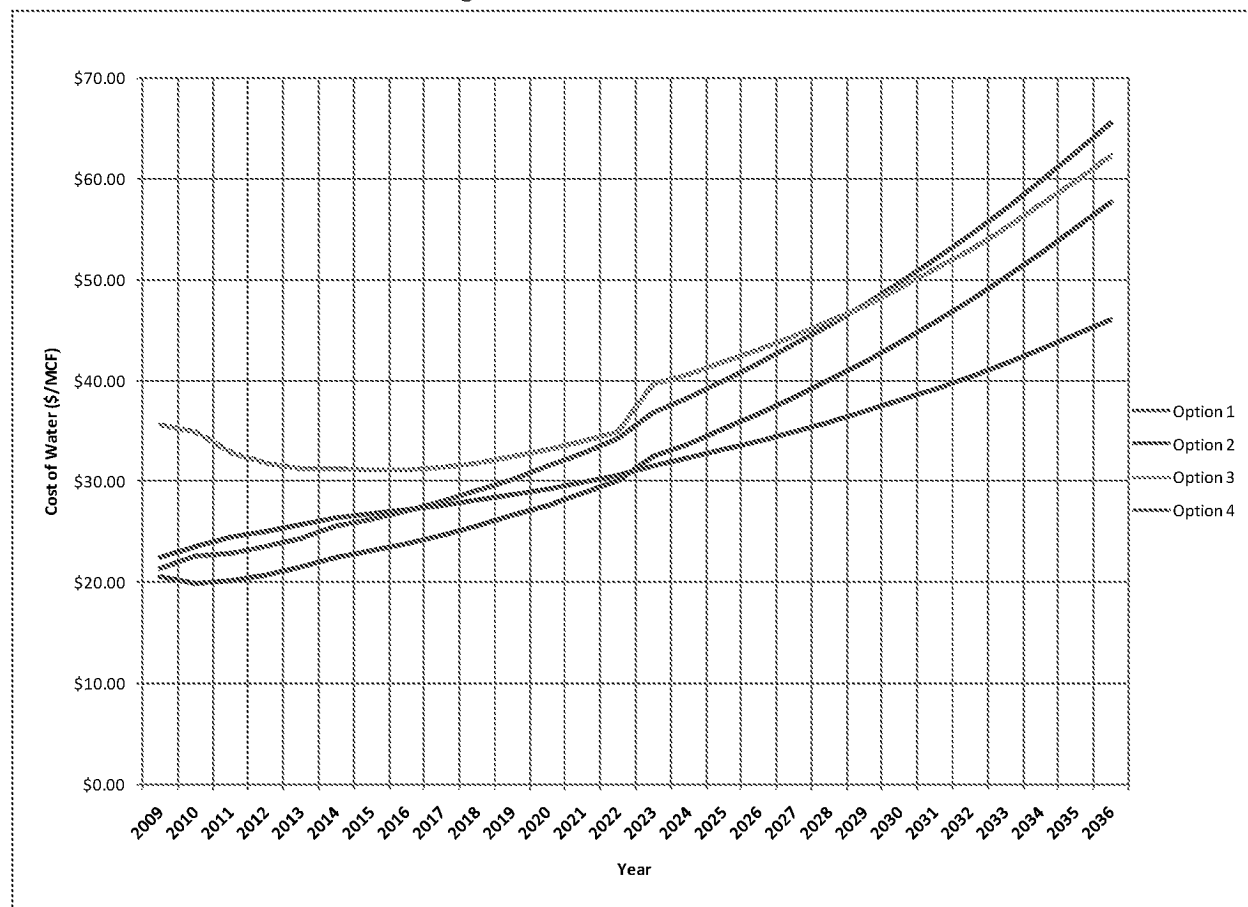
DWSD officials have indicated that Flint, GCDC-WWS, and GLCUA could realize reduced costs for water through a partnering arrangement. In this scenario, Flint, GCDC-WWS, and GLCUA would execute the new master agreement and would be responsible for the construction and operation of a portion of the transmission facilities upgrades planned by DWSD. Under this scenario, the distance and elevation factors used for establishing rates can be reduced.

Figure 6.1 shows the projected cost of water for Flint and GCDC-WWS; Figure 6.2 shows the projected cost of water for GLCUA.

Figures 6-1 and 6-2 show that over the 25-year planning period, option four results in the lowest cost of water of the four options considered for continued DWSD supply. This option will be compared against the alternative of constructing a new Lake Huron water supply.

**Figure 6-1: Flint and GCDC-WWS Cost of Water**



**Figure 6-2: GLUCA Cost of Water**

## 7 Alternative 2 – New KWA Lake Huron Water Supply

### 7.1 New Lake Huron Water Supply Concept

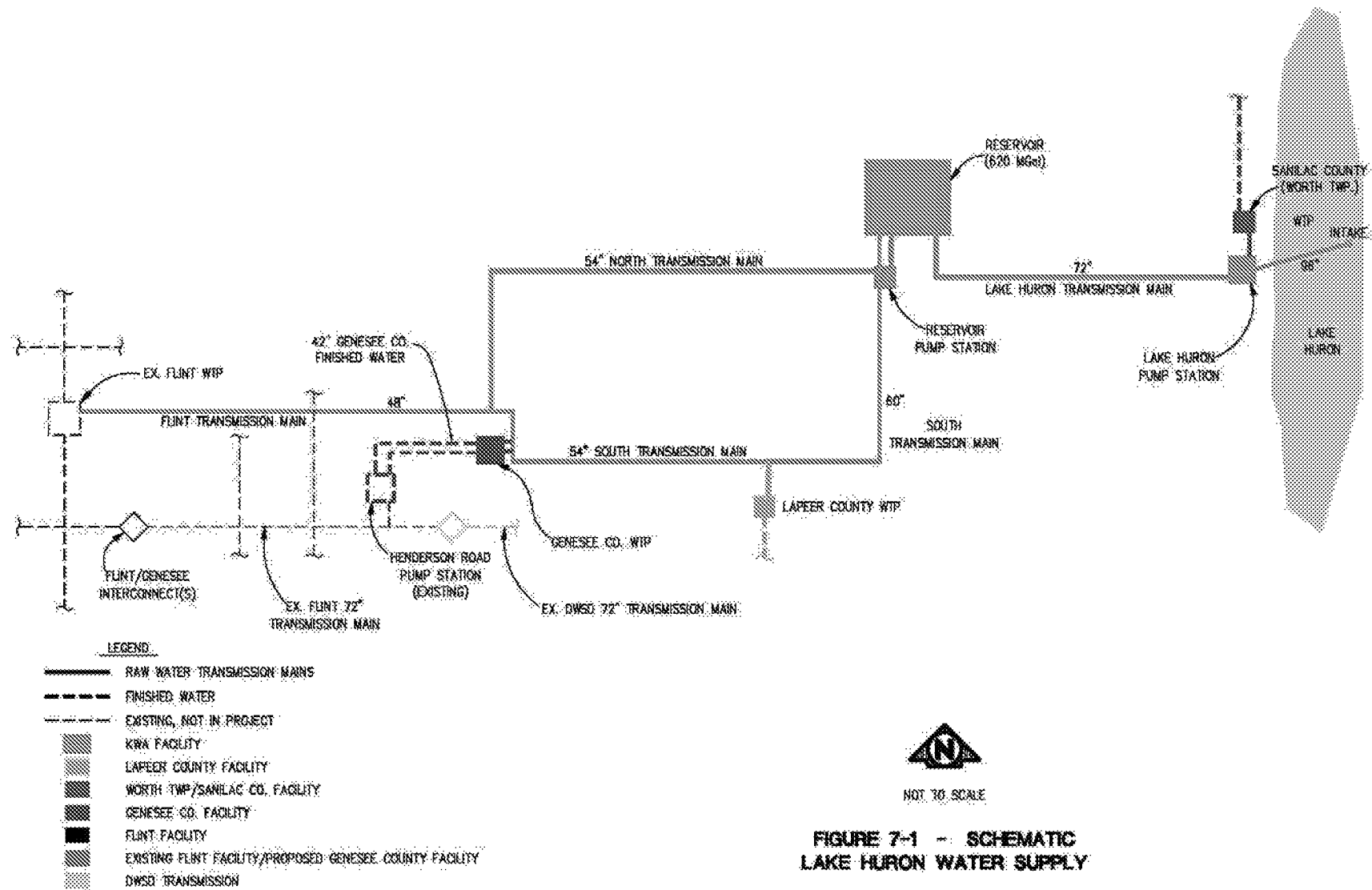
Figure 7-1 (page 9) schematically shows the proposed new water supply. Components are color coded to delineate the KWA's responsibilities and member communities' responsibilities.

The authority will be responsible for delivery of raw water to the member communities; each community will be responsible for the treatment and distribution of water to its customers.

#### 7.1.1 Source

Water for the new supply is planned to be drawn from Lake Huron. In 2002, Genesee County purchased 230 acres of land adjacent to Lake Huron as a potential site for a new water supply facility. The site is located in Worth Township, Sanilac County, about 20 miles north of Port Huron, Michigan.

Figure 7-1: Schematic



### **7.1.2 Intake**

A submerged crib intake is planned to be located about 3.2 miles from the shoreline, in 40 feet of water. It is believed that this location is far enough from shore to provide a steady supply of high-quality water from the upper lakes and is deep enough as to not interfere with shipping. The intake is planned with provisions for controlling zebra mussels and ice.

A single pipeline to convey water from the intake, located under the lake bottom, to a shorewell is planned. An inland reservoir will provide reliability for the single intake, which provides storage capacity for the MDD for a period of seven days. This period is considered adequate to allow for maintenance or repairs to the intake.

The proposed intake is planned with a capacity of 200 mgd, two times the projected 50-year MDD. The intake is planned to have greater capacity than other components due to the difficult construction conditions and relatively high cost, in relation to other project costs.

### **7.1.3 Lake Huron Pumping Station**

The Lake Huron Pumping Station (LHPS) is proposed to be located adjacent to Lake Huron, pumping raw water from the intake shorewell to facilities located further inland for storage, treatment, and distribution. Two-stage pumping is planned: low-lift pumps will draw water from the shorewell and pump to adjacent ground storage tanks; high-service pumps will draw from the storage tanks and pump raw water to the inland reservoir.

The pump station facility is planned for the projected 50-year demand, although initial pumping equipment will be designed for the 25-year demand. The pump station is planned with provisions for expansion to 200-mgd capacity, consistent with the ultimate capacity of the intake.

Security provisions are planned for the pumping station facility. Backup power will be provided for system monitoring and control, security, lighting, and HVAC. Backup power for pumping is not planned; water can be supplied to customers from the inland reservoir for several days in the event of a power failure.

### **7.1.4 Transmission Mains**

New pipelines will be necessary to transport water from the Lake Huron source to the customers.

Most of the area between Lake Huron and the proposed service area is rural. Elevations between the lake and Flint vary from a low of 590 feet to a high of 975 feet. Intermediate pumping between Lake Huron and Flint will be required to limit operating pressures.

Although specific routes have not been chosen, it is assumed that pipelines will primarily follow existing roads. Engineers have reviewed several routes to gain an understanding of road types and conditions, soil conditions, terrain, presence of existing utilities, stream and river crossings, land use, and environmental conditions that may be encountered with pipeline construction. Using this information, cost estimates for right-of-way acquisition, excavation, and restoration for the new pipelines have been developed, regardless of their route.

Engineers and planners have designed the proposed transmission mains to provide sufficient capacity for the 25-year MDD. The pipeline between Lake Huron and the inland reservoir is

planned to be a single line; the reservoir will have sufficient storage to meet maximum demand over a consecutive seven-day period, allowing for repair or maintenance of the pipeline. Other pipelines are planned to be dual lines, except where alternative provisions for reliability are available.

A specific pipeline material has not been selected, however, it is assumed that pipe may be ductile iron pipe (DIP), concrete pressure pipe (CPP), or steel pipe. DIP is available in sizes up to 64 inches in diameter.

Pipeline capacity has been developed using the following criteria:

- Maximum operating pressure: 200 psi
- Hazen Williams C-factor: 120

Figure 7.1 (page 9) shows the proposed pipeline sizes to provide capacity for the 25-year MDD.

The following pipeline appurtenances have been included in the initial planning for transmission mains.

- Isolation valves: electric actuated gate valves, at six-mile intervals
- Provisions for flushing, draining, and surge relief: periodically at streams or drains
- Provisions for air release: at high points

Additional capacity in excess of the projected 25-year MDD can be provided by the addition of intermediate pumping facilities, construction of another pipeline, or additional reservoir storage. As demands approach the projected 25-year MDD, an evaluation of future needs and alternatives should be completed to develop a specific plan for future expansion.

#### **7.1.5 Raw Water Reservoir and Pumping**

The concept for a new water supply includes an inland reservoir. The planned reservoir provides storage inland, away from Lake Huron, which can supply water to KWA customers when the single pipeline between the lake and the reservoir or the intake is out of service for repairs or maintenance. The proposed reservoir has a capacity of 620 million gallons, which can supply the MDD of KWA customers for more than seven consecutive days.

A single-cell reservoir is planned initially, based upon 25-year demands. A second cell can be added for increased future demands. A specific site for the reservoir has not been selected, but at least 190 acres of land is recommended to provide space for future expansion.

Water from the LHPS will normally be discharged directly into the reservoir; a second pumping station located at the reservoir will draw water from the reservoir for pumping to downstream customers. Although the flow-through operation should minimize loss of water quality, provisions will be provided for chemical control of algae and other potential water quality concerns in the reservoir.

Twin pipelines are planned downstream of the reservoir to provide reliability; one pipeline will be available to supply water in the event one is out of service for repairs or maintained. Together, the two pipelines have capacity for the 50-year MDD; however, an individual pipeline will have capacity only for 75% of the MDD. During periods when one pipeline is out of service for repairs or maintenance, restrictions on outdoor water use may be required to reduce demands to this level.

The reservoir pump station is planned to pump concurrently to both pipelines. Five 20-mgd pumps are planned initially to deliver the 25-year MDD. Space is provided in the planned facility for the addition of two pumps to meet the 50 year demand.

Backup power for system control and monitoring, security, lighting, HVAC, and pumping are included for the planned facility.

## *7.2 Service to KWA Member Communities*

The concept for a new Lake Huron water supply assumes that the KWA will deliver raw water to each member community and that each community will be responsible for its treatment and distribution. Additional facilities or modifications will be required by each member community to replace their existing water supply. Each member community has different needs described below.

### **7.2.1 Sanilac County**

The new water supply can provide service to Sanilac County communities from any point along the proposed pipeline. For this study, it is assumed service is provided to Worth Township. The facilities and cost for providing service to Worth Township will be similar for other communities. Worth Township is presently supplied finished water from the Lexington Worth Township's Utility Authority (LWTUA); LWTUA is supplied water from the Village of Lexington. LWTUA distributes water to Worth Township properties along Lake Huron and M-25. The southerly end of the LWTUA distribution system is adjacent to the planned site for the intake and pumping station for the new KWA water supply.

To supply Worth Township with the new Lake Huron water supply, treatment will be required. Raw water from the LHPS ground storage tanks will be pumped to an adjacent treatment facility to be treated by microfiltration, and disinfection prior to re-pumping to the existing LWTUA distribution system. Microfiltration is a well established treatment process for treating Great Lakes water. Microfiltration equipment is modular, and future expansion, if necessary, is easily accomplished by the addition of modules and building expansion.

An analysis of the LWTUA distribution system to evaluate the impact of a new supply has not been completed.

### **7.2.2 Lapeer County**

DWSD currently provides treated water to Lapeer County communities of Lapeer, Imlay City, Almont, and Mayfield Township. Provisions for water treatment will be required for the new supply, to provide service to these and other Lapeer County communities.

Alternatives for treatment include a single treatment plant for Lapeer County, treatment plants for individual communities, or supply of finished water from Genesee County. After preliminary consideration, the alternative of a single Lapeer County facility is included in this study. The selection of the best alternative for treatment should be made after customers and demands are finalized.

Transmission piping, to convey treated water from the treatment facility to the four communities, is included in the project costs for Lapeer County. Treatment by microfiltration is planned. Treatment equipment is modular, and facilities can be expanded relatively easily.

The proposed treatment facility and finished water transmission mains have been planned for the 25-year MDD. Treatment facilities can be easily expanded for increased demands. Pipeline capacity can be increased by constructing additional pipelines or adding pumping capacity.

### **7.2.3 Genesee County**

If the current finished water supply from Flint and DWSD is replaced with the new Lake Huron supply, several modifications to the GCDC-WWS system will be required.

#### **7.2.3.1 Water Treatment**

GCDC-WWS currently purchases finished water for distribution to its customers. With the proposed KWA raw water supply, treatment will be required prior to distribution.

Conventional treatment by clarification and filtration is planned. Specific processes include rapid mixing, flocculation, high-rate plate settler clarification, and granular media filtration. Provisions are included for the future addition of treatment processes, if necessary for compliance with regulations or to improve treatment.

The water treatment plant is planned to have four equally sized pretreatment trains. The loading rate of filters at the initial MDD is conservative. It is assumed that once the plant is operational, plant-scale trials will demonstrate the suitability of high-filter surface loading rates, which are expected to ultimately provide sufficient capacity for the 50-year demand without the addition of more filters.

#### **7.2.3.2 Henderson Road Pumping Station**

Finished water from the planned GCDC-WWS water treatment plant will be pumped to the Henderson Road Pumping Station (HRPS). The HRPS currently pumps water to the east and north areas of Genesee County. With the planned new Lake Huron supply, the HRPS will provide high service pumping, supplying finished water to all of the GCDC-WWS distribution system. Additional pumps must be added for its increased service area.

Three pumps currently provide a firm capacity of 16 mgd and a total capacity of 30 mgd. Additional pumping capacity of 8 mgd is needed to meet the projected demands during the initial years of operation. Additional pumping capacity of 16 mgd (from current capacity) is required for the projected 25-year demands. Expansion of the HRPS building is required to accommodate both of the additional pumps. Emergency backup power is currently available at the HRPS facility and is adequate for operating three 8-mgd pumps.

The HRPS is presently supplied water by a 48-inch pipeline from Flint's 72-inch transmission main. The 48-inch pipeline will need to be reconfigured to allow the HRPS to pump to the 72-inch transmission for distribution to the south and west areas of the county. This requires replacement of the meter and check valves with a control valve at the connection to the 72-inch main.

#### **7.2.3.3 Flint's 72-Inch Transmission Main**

A transmission main supplies water from the DWSD system to Flint from DWSD's Lake Huron treatment plant, just north of Port Huron. East of Genesee County, the pipeline is owned and operated by DWSD. The City of Flint owns and operates the 72-inch transmission main running from the DWSD meter located near the county line, through



Genesee County to the Flint water treatment plant. The GCDC-WWS distribution system is supplied through eight connections to the Flint 72-inch main.

Although the 72-inch main will no longer be necessary to convey water to Flint under this concept being studied, maintaining the main's operation will allow it to continue to supply the GCDC-WWS distribution system. In this role, future responsibility for the main should be transferred from Flint to GCDC-WWS.

#### **7.2.4 Flint**

Prior to contracting with DWSD in 1965 for water supply, the City of Flint treated water from the Flint River. DWSD delivers finished water to Flint, but the city's water treatment plant has been maintained and operated on a limited basis as a backup supply. Some modifications at the city's treatment plant will be necessary to allow it to reliably provide treatment on a continuous basis. Proposed modifications required for full-time operation and treatment of Lake Huron water include:

- Piping and metering to deliver raw water
- Power upgrades, including emergency / backup power
- Disinfection upgrades
- Chemical feed systems
- Finished water pumping
- Updated controls and monitoring
- Added security measures

### ***7.3 Permitting***

Construction of the proposed new water supply requires permits and approvals from federal, state, county, and local agencies, railroads, and utilities. It is expected all required permits and approvals can be obtained during design. A permit to withdraw water from Lake Huron has been issued by the MDEQ.

### ***7.4 Engineer's Opinions of Cost***

Engineers and planners have developed opinions of cost for construction of the new water supply and for its ongoing operation and maintenance, using the criteria identified in Section 3. Costs include contingency allowances of 20%, and engineering, legal, bond, and administrative allowances of 17%.

#### **7.4.1 Construction Costs**

Table 7-1 below summarizes the project cost of a new water supply; Table 7-2 (page 15) shows the cost distribution among the KWA member communities. KWA costs are distributed to members proportionally, based upon each community's share of the total capacity provided.

**Table 7-1: Project Costs**

	Engineer's Opinion of Cost
Construction Cost - New Water Supply (KWA)	\$317,367,567
Construction Cost - City of Flint Treatment	\$5,319,000
Construction Cost - GCDC-WWS Treatment	\$76,607,003
Construction Cost - Lapeer County Treatment	\$29,150,000
Construction Cost - Sanilac County Treatment	\$1,328,000
<b>Subtotal - Construction Cost</b>	<b>\$429,771,570</b>
Design Contingencies (5%)	\$21,488,579
Construction Contingencies (15%)	\$64,465,736
Engineering, Bond, Legal, & Administrative (17%)	\$73,061,166
Utilities	\$10,385,000
Property	\$2,597,720
<b>Total Project Cost</b>	<b>\$601,769,771</b>

**Table 7-2: Project Costs for New Lake Huron Water Supply**

Project Component	Total Project Cost	Sanilac Co. Share	Lapeer Co. Share	GCDC-WWS Share	Flint Share
KWA Lake Huron Water Supply	\$443,885,767	\$813,723	\$86,312,736	\$188,899,927	\$167,859,381
New Sanilac Co. Facilities	\$1,849,360	\$1,849,360			
New Lapeer Co. Facilities	\$40,009,060		\$40,009,060		
New Genesee Co. Facilities / Upgrades	\$110,038,554			\$110,038,554	
New Flint Upgrades	\$5,987,030				\$5,987,030
<b>Totals</b>	<b>\$601,769,771</b>	<b>\$2,663,083</b>	<b>\$126,321,796</b>	<b>\$298,938,481</b>	<b>\$173,846,411</b>

#### 7.4.2 Treatment Costs

Table 7-3 summarizes the treatment costs during the first year of operation, assumed to be 2014. The costs for operating and maintaining the new KWA water supply water to each community is distributed on the basis of each community's projected annual consumption. These costs are combined with local treatment costs to determine the total cost for supplying treated water to each community. Costs are expressed in dollars per 1,000 cubic feet (\$/MCF) to allow comparison with DWSD commodity units.

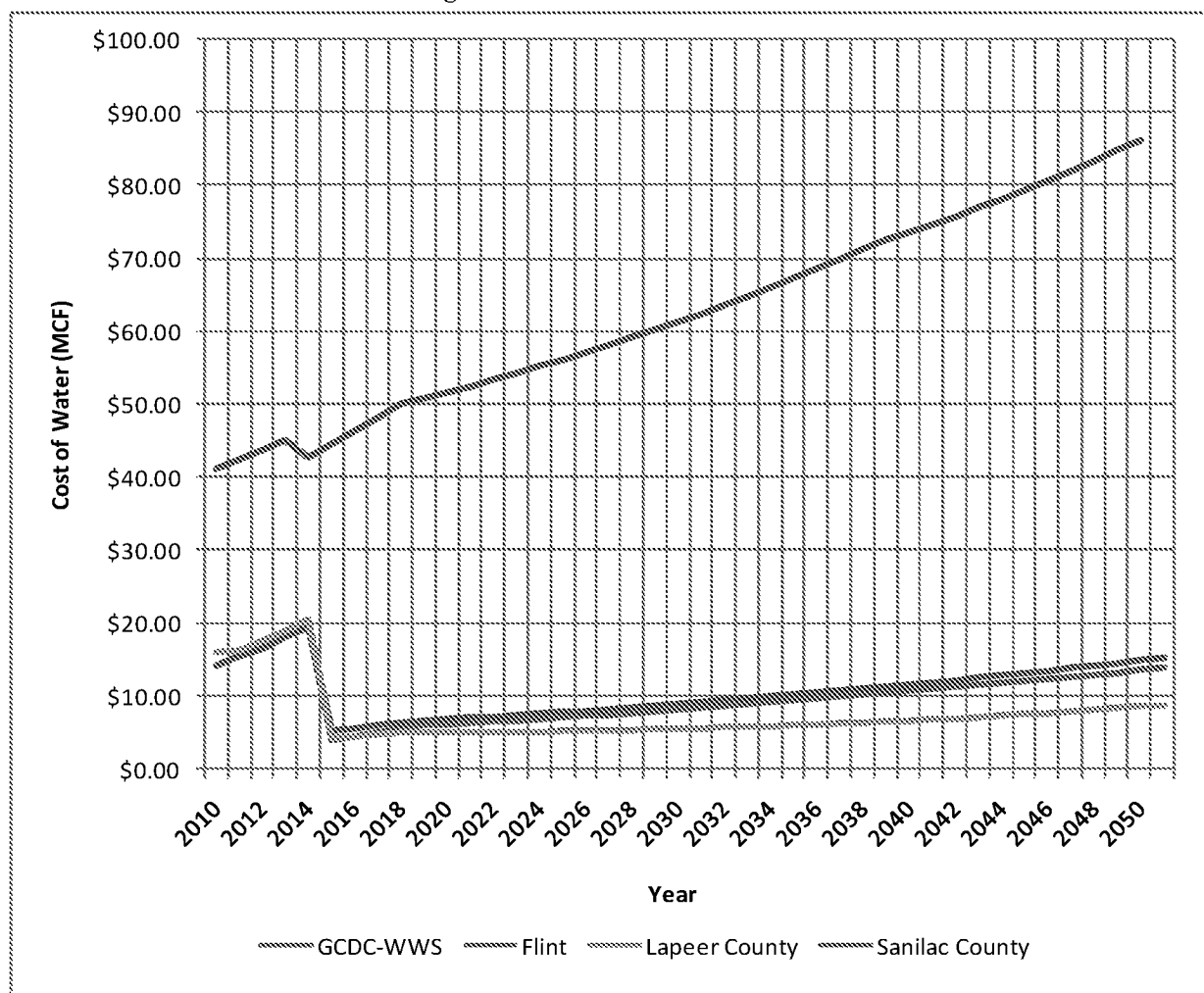
The last column of Table 7-3 below shows the current DWSD commodity charges, for comparison with the projected 2014 cost of treatment by the new Lake Huron supply being studied.

**Table 7-3: Projected Initial Treatment Costs with New Lake Huron Water Supply**

Community	KWA (\$/MCF)	Local (\$/MCF)	New Water Supply Treatment Cost (2014)	2009-2010 DWSD Rate
Sanilac County	\$1.30	\$41.56	\$42.86	N.A.
Lapeer County (GLCUA)	\$1.30	\$3.11	\$4.41	\$16.10
GCDC-WWS	\$1.30	\$2.86	\$4.16	\$14.32
City of Flint	\$1.30	\$4.13	\$5.43	\$14.32
<b>Notes</b> 1. New water supply costs based on projected annual consumption of each community in year 2014. 2. Costs do not include debt retirement or depreciation expense.				

### 7.4.3 Annual Treatment Costs

Projected average annual treatment costs resulting from the new water supply are shown through the year 2050 on Figure 7-2 (page 16). Neither debt retirement nor depreciation is included in the annual operating and maintenance expenses shown on Figure 7-2.

**Figure 7-2: Cost of Treated Water**

### *7.5 Alternatives for Cost Reduction*

The concept developed for a new water supply is based on criteria established prior to beginning the study. There are alternatives which can reduce the cost of a new water supply, yet provide a safe, reliable supply. Project costs can be reduced by more than \$100 million through incorporation of some of the alternatives identified here.

#### **7.5.1 Cost-Reduction Alternatives – KWA Lake Huron Supply**

- Provide a single supply pipeline (relocate reservoir further inland)
- Reduce the capacity of the Lake Huron intake and pumping station by 50%
- Negotiate an agreement with DWSD to provide backup and eliminate the reservoir
- Provide single-stage pumping at the LHPS
- Reduce size of transmission mains by either increasing operating pressures or reducing capacity

#### **7.5.2 Cost-Reduction Alternatives – GCDC-WWS**

- HRPS – construct additional 10-MG storage in lieu of redundant finished water pipeline
- Provide treatment by microfiltration instead of conventional treatment
- Locate WTP at HRPS site

#### **7.5.3 Cost-Reduction Alternatives – Flint**

- Reduce capacity of planned facilities

#### **7.5.4 Cost-Reduction Alternatives – Lapeer County**

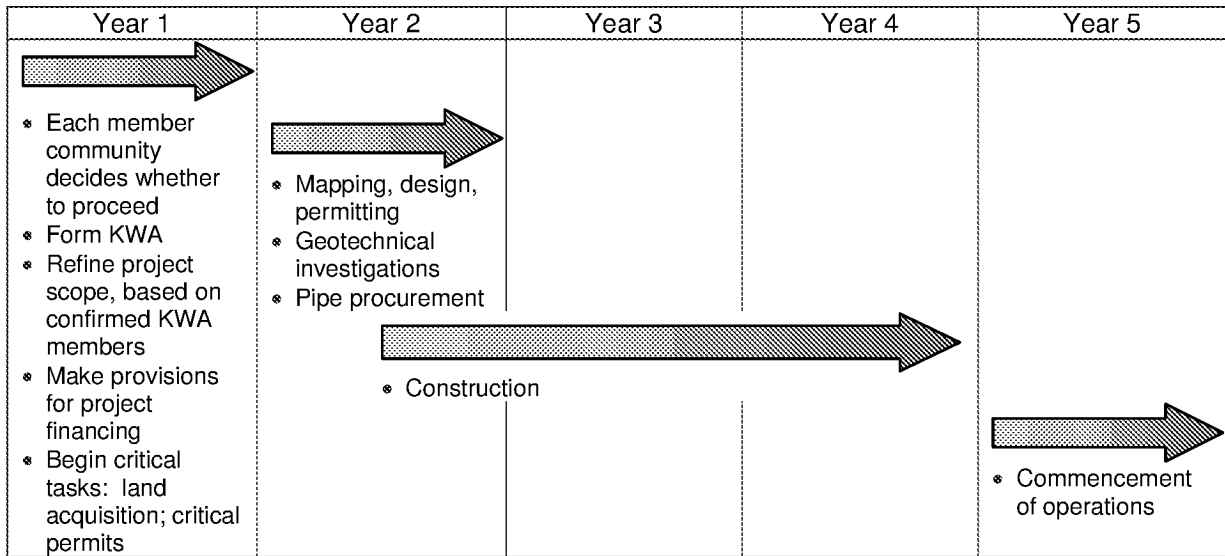
- Reduce capacity of planned facilities
- Other options for treatment and distribution may reduce costs once actual service area and demands are defined.

#### **7.5.5 Cost-Reduction Alternatives – Sanilac County**

- Identify specific customers for water supply and determine facilities and costs for specific conditions

### *7.6 Implementation*

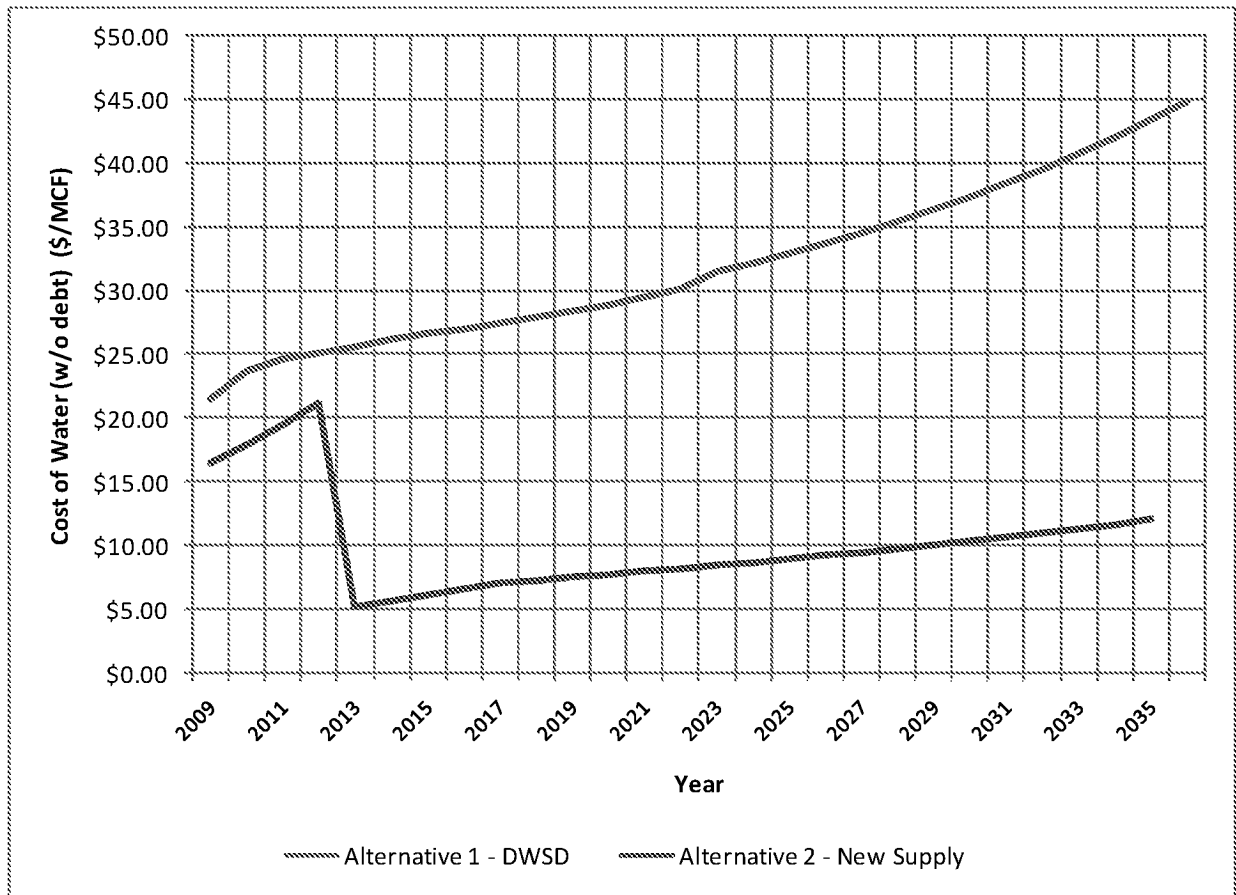
The following schedule shows that planning and design of the new water supply can be completed within four years. Early procurement of pipe and materials, division of construction work to allow for more contractors or crews, advance work on critical issues, and other measures can be incorporated in the proposed project to accelerate the schedule.



## 8 Comparison of Alternatives

With the investments in facilities planned by DWSD, either of the alternatives considered are believed to provide a reliable, long-term water supply with sufficient capacity for the needs of the study area. Both alternatives address the criteria established for reliability, water quality, quantity and security. The primary difference between the two alternatives is economics. Regardless of the alternative selected, a new pipeline and other facilities are planned for construction. As a result, the cost of water will increase regardless of the alternative selected; however, each will be affected differently.

Figure 8-1 shows the projected cost of water over the planning period for both alternatives. For demonstration purposes, the cost of water for the new Lake Huron water supply alternative does not include the cost of repayment of debt incurred for its construction. The graph shows that without the debt of constructing the new system (or once the debt for its construction is repaid), the cost of water from the new supply will be substantially less than continuing to purchase water from DWSD.

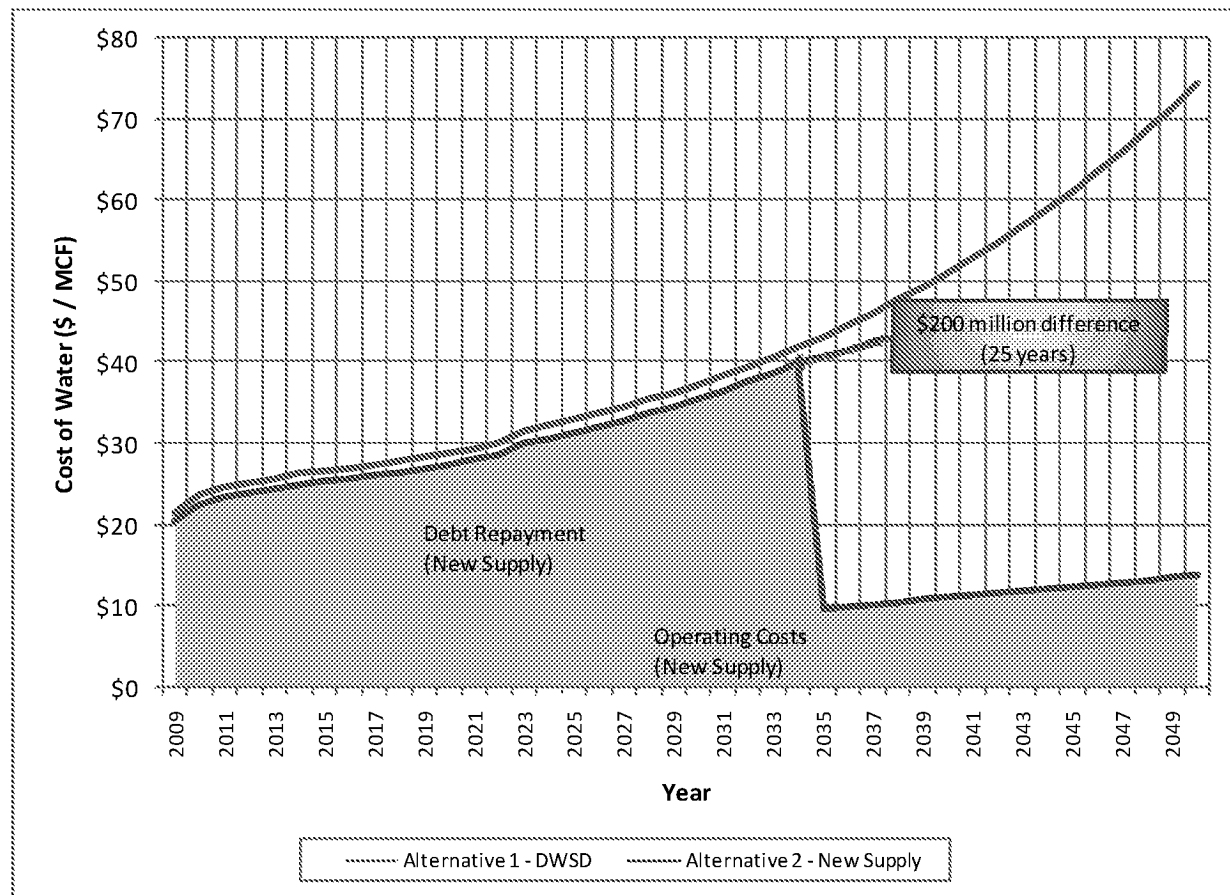
**Figure 8-1: Comparison of Alternatives**

## 9 Debt Service

The cost of water for the DWSD alternative was developed using the DWSD rate methodology which includes recovery of capital investment. For comparison, the cost of water for the new Lake Huron supply should include the cost of financing its construction.

If 25-year bonds are used for financing the construction of the new Lake Huron supply, analysis has shown that the cost of water for the new Lake Huron supply can be less than with continuing service from DWSD. Over the 25-year life of the bonds, the total cost of water with continued DWSD supply is projected to be \$200 million greater than with the new Lake Huron supply.

Figure 9-1 demonstrates the cost savings resulting from new Lake Huron supply during the 25-year bond period; the figure also shows the reduction of the cost of water with new Lake Huron supply once the debt is paid back.

**Figure 9-1: Comparison of Alternatives**

## 10 Other Impacts of Long-Term Water Supply Alternatives

In addition to the criteria established in Section 2 for comparison of long-term water supply alternatives, there will be other impacts. A review of some of these follow.

### 10.1 Employment

Either alternative will require the construction of new facilities. Depending on the alternative, up to 1,200 construction jobs will be created over a three-year period. With Alternative 1, the new facilities constructed by DWSD must comply with Executive Order 4001 of the Mayor of Detroit, which requires that either at least 50% of labor for construction is Detroit residents or a penalty is assessed against the contractor. Without the restrictions, Alternative 2 offers the Genesee, Lapeer, and Sanilac County region more opportunity to furnish local labor for construction.

Continued DWSD supply will result in a negligible increase in operation and maintenance staffing once the new facilities are constructed, since water will be supplied from an existing treatment plant. Approximately 45 new full-time positions will result from operation and maintenance of three new water treatment plants and other facilities consequential to the new Lake Huron water supply.

### 10.2 Facility Life

DWSD plans for construction of a new section of transmission main; this main is a small piece of the overall DWSD system. Although the facilities planned by DWSD will be new, most other

components of the DWSD system are 50 to 100 years old. As a result of the age of the DWSD system, future operating and replacement costs are anticipated to continue to be greater with continued DWSD supply than with the new system provided by KWA.

### *10.3 Environmental Impacts*

Both alternatives will result in approximately 70 miles of new transmission main. Since specific routes have not been determined, it is assumed that both alternatives will have similar impacts environmentally as a result of pipeline construction. Permitting for construction of either pipeline alternative is expected to be of a routine nature. Impacts are anticipated to be temporary, occurring only during the construction period.

Continued supply from DWSD provides for supply of water through an existing intake from Lake Huron. The alternative for a new supply requires construction of a new intake. Environmental impacts during construction of the new intake will be of a temporary nature. With either alternative, the total quantity of water drawn from Lake Huron will be equivalent. A permit for withdrawal from Lake Huron has been issued for the new water supply.

## **11 Glossary**

**25 Year Demand** – The projected quantity of water needed in the future (in 25 years).

**Average Day Demand** – The quantity of water desired over a period of 24 hours, averaged over a year.

**Capacity** – The greatest quantity that can be conveyed or processed by a particular component, or the limiting quantity of a facility or series of components.

**Clarification** – Water treatment process providing for the removal of particles from water using gravity settling.

**Construction Contingencies** – An allowance in the project budget so money is available in the event unexpected conditions are encountered during the construction phase which requires additional work to finish the project.

**Construction Cost** – The cost of constructing proposed facilities; including labor, materials, and contractor's equipment charges and fees.

**Crib** – Submerged structure which surrounds inlet to intake pipe for protection.

**Demand** – The quantity of water desired by customers.

**Design Contingencies** – An allowance in the project budget so money is available in the event that design and permitting requirements result in the need for additional facilities, longer pipeline routes, more difficult construction conditions, or other conditions which increase the project cost.

**Disinfection** – Treatment process to destroy or prevent the growth of disease-carrying microorganisms.

**Distribution** – Delivery of water to customers (homes, businesses, institutions, etc.) by a pipe network.

**ENR Construction Cost Index** – An index for “time adjustment of construction costs”. Engineering News- Record (ENR) is a long established publication serving the construction industry. The index is computed based upon the cost 200 hours of labor, 25 cwt structural steel, 1.128 tons cement, and 1,088 board feet of lumber. The index has been computed over a 100+ year history.

**Filtration** – Treatment process using a porous material to trap and remove suspended particles from water.

**Finished water** – Water that has received treatment and meets standards and regulations established for drinking water.



**Firm Capacity** – The maximum quantity of water that can be treated or pumped in the event that the largest mechanical component or pump is out of service.

**Governmental Authority** – A governmental entity, comprised of other governmental units (cities, townships, counties, etc.), for a special purpose such as sharing services (water utilities, public safety, libraries, etc.)

**Ground Storage** – Tank at ground level for the storage of water.

**Hazen Williams C Factor** – Engineering coefficient used for considering the effect of pipe material on hydraulic capacity.

**High Service** – Term used to describe pumping against high pressure, often resulting from elevation increases and friction in pipeline(s).

**Intake** – Submerged pipe inlet to draw water from a lake.

**Local Storage** – Water storage tanks located in the distribution system, often providing for supplying water for peak demands because of their proximity to the customers' locations.

**Low Lift** – Term used to describe pumping against relatively low pressure, usually where water must be lifted to provide for another treatment process.

**Malevolent** – Actions intended to result in harmful or malicious impact.

**Maximum Day Demand (MDD)** – The maximum quantity of water desired by customers over any 24 hour period.

**Microfiltration** – Treatment process using fine-pored synthetic membranes for removal of particles in water.

**O&M** – Acronym for operating and maintenance. Operating and maintenance is the ongoing cost for operation, including labor, power and utilities, chemicals and supplies, maintenance and repairs, supervision, and administration.

**Peak Hour Demand** – The greatest quantity of water desired for consumption during any one hour period.

**Project Costs** – The total cost of constructing proposed facilities; including the cost of construction plus other costs expected during the planning, design, and construction phases. Other costs often include land acquisition, utility service, engineering, legal fees, and appropriate contingencies.

**Proxy** – An allowance for future increased water use assumed by the water supplier, in absence of information provided by the water customer.

**Raw Water** – Water in its natural state, prior to treatment.

**Reservoir** – Earthen basin or tank for the storage of water.

**Residuals** – Solid materials resulting from the treatment of water. Residuals may include solids (silt, algae, etc.) removed from the source water or the precipitate resulting the addition of chemicals for treatment.

**SCADA** – Acronym for “Supervisory Control and Data Acquisition”. SCADA is a term commonly used to describe the instrumentation to measure or monitor equipment and/or processes, and controls to operate equipment.

**Shorewell** – Vertical shaft located adjacent to lake, extending from the ground surface down to the intake pipe.

**Zebra mussels** – small shellfish introduced to Great Lakes through ballast discharge from international shipping. Zebra mussels are a concern to waterworks because they attach to submerged intakes and pipes, resulting in reduced capacity or plugging.

## 12 Abbreviations

CPP	Concrete Pressure Pipe
DIP	Ductile Iron Pipe
DWSD	Detroit Water and Sewerage Department
ENR	Engineering News-Record
GCDC-WWS	Genesee County Drain Commissioner – Division of Water and Waste Services
GLCUA	Greater Lapeer County Utilities Authority
HRPS	Henderson Road Pumping Station
HVAC	Heating, Ventilation, and Air Conditioning
KWA	Karegnondi Water Authority
kWh	Kilowatt-hour
LWTUA	Lexington Worth Townships Utilities Authority
MCF	1,000 Cubic Feet
MDD	Maximum Day Demand
MDEQ	Michigan Department of Environmental Quality
MG	Million Gallons
Mgd	Million Gallons per Day
O&M	Operating and Maintenance
SCADA	Supervisory Control and Data Acquisition
WTP	Water Treatment Plant

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**From:** Berndt, Jason (DEQ)  
**Sent:** Friday, December 02, 2011 1:02 PM  
**To:** Benzie, Richard (DEQ);Shekter, Jean (DEQ);DeBruyn, Dana (DEQ)  
**Subject:** 2011 Annual CD Report  
**Attachments:** 2011 CD Annual Report diane review.doc

Attached is a draft copy ready for your review and comments. Thanks to Jean, as well, for helping write portions of this report and appendices. I would like to have comments incorporated and back to Diane/Connie before the end of next week, if possible.

Michigan Department of Environmental Quality  
Resource Management Division

# **ANNUAL REPORT ON CAPACITY DEVELOPMENT PROGRAM FISCAL YEAR 2011**

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December 2011

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**List of Acronyms**

ACO	Administrative Consent Orders
Act 399	Safe Drinking Water Act, 1976 PA 399, as amended
AWWA	American Water Works Association
CCR	Consumer Confidence Report
CDP	Capacity Development Program
CWS	Community Water System
DACO	District-Initiated ACO
DDBPR	Disinfectants and Disinfection Byproducts Rule
DWRF	Drinking Water Revolving Fund
eDWR	Electronic Drinking Water Reporting
ERG	Expense Reimbursement Grant
ERP	Emergency Response Plan
ETT	Enforcement Tracking Tool
FAP	Financial Action Plan
FY	Fiscal Year
GWR	Ground Water Rule
KWA	Karegnondi Water Authority
LHD	Local Health Department
MCL	Maximum Contaminant Level
MDEQ	Michigan Department Environmental Quality
MEHA	Michigan Environmental Health Association
MGMT	Michigan Groundwater Management Tool
MOR	Monthly Operation Reports
NCWS	Noncommunity Water Systems
NTNCWS	Nontransient Noncommunity Water Systems
OTCU	Operator Training and Certification Unit
PWSID	Public Water System Identification Number
RMD	Resource Management Division
SDWA	Federal Safe Drinking Water Act
SDWIS/State	Safe Drinking Water Information System/State
SNC	Significant Noncomplier
SSI	Small Systems Initiative
SWIPP	Surface Water Intake Protection Program
TMF	Technical, Managerial, and Financial
USDA-RD	United States Department of Agriculture – Rural Development
USEPA	United States Environmental Protection Agency
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program

## **1 Introduction**

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) added provisions for each state to develop a Capacity Development Program (CDP). The objective of the CDP is to enhance public health protection by helping water systems to develop and maintain the technical, managerial, and financial (TMF) capacity they need to consistently deliver a safe, reliable, and abundant supply of drinking water to all customers.

The purpose of this document is to demonstrate to the United States Environmental Protection Agency (USEPA) that the state is implementing a capacity development strategy as required in the SDWA, Section 1420(c)(1)(C), or risk losing 20 percent of the annual Drinking Water Revolving Fund (DWRf) allotment that the state is otherwise entitled to receive under the SDWA, Section 1452.

This report corresponds to the criteria set forth in the USEPA memo "Reporting Criteria for Annual State Capacity Development Program Implementation Reports" dated June 1, 2005. The report is due to the USEPA within 90 days of the end of the reporting period. Michigan's reporting period is the state fiscal year (FY) that ends on September 30, so this report is due by December 30 of each year. Elements discussed in this report are:

- New Systems.
  - Identify legal authority.
  - Identify control points.
  - List of new systems.
- Existing Systems.
  - Identify tools and activities.
  - Identify systems.
  - Identify needs and provide assistance.
  - Review implementation and address findings.
  - Modify strategy.

## **2 New Systems Program**

### *2.1 Identify Legal Authority*

The legal authority remained unchanged during the reporting period. The CDP is implemented by the Michigan Department of Environmental Quality (MDEQ), Resource Management Division (RMD), through amendments to the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), by application of capacity development policies and guidance documents and through cooperation and partnerships with other agencies.

### *2.2 Identify Control Points*

The control points remained unchanged during the reporting period. As outlined in the *New Community Water System Capacity Guideline Document*, dated May 1, 2000, new systems must demonstrate TMF capacity before serving water to the public. The new systems program relies on two control points: construction permits, which are required

by law, and final inspection, which is required by policy. Generally, a construction permit is issued based on the technical capacity of the proposed system. For Community Water Systems (CWS), the financial and managerial capacity requirements may still be pending while the system is under construction. Approval to commence operation is not granted until after an acceptable final inspection and approval of a financial plan and operations plan that address financial and managerial capacity. For nontransient noncommunity water systems (NTNCWS), the RMD has delegated the authority to the local health departments (LHDs) to review, approve, and issue construction permits. When water systems begin the permit application process, the LHD helps them outline their financial and managerial capacity. Prior to receiving approval to commence operation, the NTNCWS must submit a financial plan and a managerial plan that includes a contingency plan and designation of a certified operator.

### 2.3 List New Systems

Lists of CWS and NTNCWS that became active during the last three FYs are in Appendix A. This report normally indicates which systems appeared on a Significant Noncomplier (SNC) list during a three year period. However, the USEPA replaced the SNC list with the Enforcement Tracking Tool (ETT) in FY2010. The ETT is a better mouse trap to indicate systems' noncompliance across all rules – giving higher weight to violations posing a greater public health threat. This year, the MDEQ looked at the SNC data for FY2009 and the ETT data for FY2010 and FY2011. Next year, only the ETT will be used.

No new systems appeared on the FY2009 SNC list or on the ETT with a score of 11 or more. New system data is more meaningful when compared to all systems. The table shows the number and percent of new systems and all systems that appear on a noncompliance list (SNC or ETT):

FY 2009 to FY 2011	CWS		NTNCWS	
	New	New & Existing	New	New & Existing
Number of systems	9	1406	42	1371
Number of systems on FY2009 SNC list or FY2010-FY2011 ETT	0	18 SNC 16 ETT	0 SNC 0 ETT	27 SNC 94 ETT
Systems on an SNC list or ETT	0%	1% SNC 1% ETT	% SNC 0% ETT	2% SNC 7% ETT

New systems are performing better than all systems overall.

## 3 Existing Systems Program Tools and Activities Used

The *Capacity Development Strategy for Existing Public Water Systems*, dated August 1, 2000, lists the programs, tools, and/or activities to help systems acquire and maintain capacity. This section describes each of the major program elements, the target audience, and a discussion of how each helps to achieve and enhance capacity.

### 3.1 Sanitary Surveys to Evaluate Systems

Target: CWS and Noncommunity Water Systems (NCWS)

Capacity of existing systems is assessed through sanitary surveys, on-site surveillance visits, and through the construction permit process.

For NCWS, sanitary surveys are conducted every five years. Construction permits and inspections are required when new wells are installed or treatment is added. A change



in classification from transient to NTNCWS also results in a capacity assessment of the existing system. These former transient NCWS are existing systems and are not included in the list of new systems in Appendix A.

For CWS, sanitary surveys are conducted every third year by RMD field staff. This frequency coincides with the requirements of the series of Surface Water Treatment Rules and the Ground Water Rule (GWR). Sanitary surveys result in systems being rated satisfactory, marginal, or deficient. Ratings are based on compliance with health-based standards, monitoring and reporting requirements, qualified operator requirements, and requirements in Act 399 or TMF sufficiency, such as well construction, general and contingency plans, and financial requirements for privately-owned systems. The RMD staff detail their sanitary survey findings and recommendations in a letter to the system. These letters may include a list of milestones with dates by which the items are expected to be addressed. Options for capacity assistance may also be offered, such as recommending a financial assessment or contacting available technical assistance providers for specific assistance. These evaluation letters help systems understand the severity of the deficiencies and prioritize response activities.

The following table summarizes data on CWS sanitary surveys, visits, and construction permits in recent years. Note that the number of construction permit applications received has declined significantly, likely due to a downturn in the state's economy.

<b>CWS Evaluations, Visits, and Construction Permits</b>			
	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>
Number of Sanitary Surveys Conducted	448	419	519
Percent Rated Satisfactory	88	80	85
Percent Rated Marginal	10	11	9
Percent Rated Deficient	5	6	6
Percent Not Rated	0	3	0
Number of Visits	1,713	1,593	1,785
Number of Construction Permits Issued	859	759	717
Percent Issued Within 10 Business Days of Receipt *	76	76	73

\* The percent completed includes water mains (which we strive to complete in 10 days) and other more complicated projects that take longer.

The surveillance visits listed in the previous table are conducted by field staff according to policy that requires the following frequency:

<b>Type of CWS</b>	<b>Smaller/Less Complex</b>	<b>Larger/More Complex</b>
<b>Wholesale customer supplies</b>	Once per three years, though most field staff strive to visit these systems annually	Once per year
<b>CWS with no treatment*</b>	Once per three years for very small systems	Once per year
<b>CWS with treatment*</b>	Twice per year for systems employing treatment that is less than "complete treatment"	Four times per year for systems employing "complete treatment"

\*Treatment employed for public health protection. Excludes water softeners or other point of entry aesthetic treatment.

In addition to scheduled surveillance visits and sanitary surveys, field staff visits water systems to investigate problems discovered as a result of routine monitoring. If water

system issues need to be elevated to local officials, the community leadership may include field staff on the agenda of council or board meetings.

### 3.2 *One-on-One Technical Assistance and Consultation*

Target: CWS and NCWS

The RMD and LHD field staffs are the primary implementers of the CDP. Water system operators develop a relationship with field staff that are the primary contact for capacity development. Each CWS is served by RMD staff from 1 of the 8 district offices, and each NCWS is served by staff from 1 of the 44 LHDs under contract with the RMD. A primary objective of the RMD field staff and the LHD is to provide excellent customer service from the construction permit process for new infrastructure through the continual assessment and oversight process during operation. Field staff achieves that objective through assistance to systems during site visits, at meetings and conferences, during training events, and consultation by telephone and e-mail. Field staff attends, participates, and presents at periodic regional operator meetings to discuss upcoming regulations, regional issues, and to network with operators and managers.

The NCWS program staff of the RMD maintains communication with each of the 44 LHDs during the year. This communication occurs routinely via phone calls, e-mail, joint office and field work, and group and individual training. Also quarterly data reviews and annual evaluations of each of the 44 LHD's work are conducted to assure and maintain water system compliance. Training of LHD staff is conducted to inform, explain, and discuss new and updated program issues and procedures. During FY 2010, the NCWS Program staff was working with select LHDs to investigate means to enhance training within the evaluation process (see discussion in Section 5.1). The NCWS staff also routinely presents topics at environmental health conferences.

To increase reliability, gain efficiencies, and improve water quality, field staff serves as consultants to encourage regionalization, foster consolidation, and create partnerships among water systems. For example:

- The city of Holland has started a project to include an emergency interconnect with the city of Wyoming. The interconnect is being constructed by the city of Holland, but half the costs will be recovered through a payback agreement with the city of Wyoming. Both communities are benefiting from this partnership. Holland will receive five million gallons per day in increased capacity and Wyoming would benefit from greater flexibility in supplying water under varying conditions.
- The city of St. Louis is anticipating applying for future United States Department of Agriculture – Rural Development (USDA-RD) funding to complete a regionalization project. This project is expected to include new wells to augment the capacity of the city of Alma water treatment plant and two interconnections from the city of Alma to the city of St. Louis. Currently, the two communities are working to form a regional water authority.
- The city of Flint and Genesee County has continued to move forward in their search for an alternative source rather than relying solely on purchased water from Detroit, as mentioned in last year's edition of this report. Together with a few Lapeer County communities, they have created the Karegnondi Water Authority (KWA) to collaborate on their effort. The RMD field staff is meeting with the KWA and their consultants in January 2012 to discuss the specific

communities involved, funding, project timeline, and the review and issuance of construction permits.

Countless other instances of one-on-one technical assistance help water systems gain TMF capacity.

### *3.3 Other Public Water System Program Efforts*

The RMD has submitted a proposal to the USEPA, Region 5, to modify Stage 2 monitoring in combined distribution systems to achieve the public health protection intended by the rule while minimizing the monitoring costs for the water systems. When approved, the RMD intends to conduct possibly three training sessions across the state where the greatest numbers of consecutive systems are located. The purpose is to reiterate a system's obligations and to update each system's monitoring plan. During the year, the RMD central staff drafted a monitoring plan template to consolidate all Disinfectants and Disinfection Byproducts Rule (DDBPR) monitoring requirements for a system. This will replace the Stage 1 monitoring plan and the Standard Monitoring Plan each supply completed following initial distribution system evaluation monitoring. For many consecutive systems, Stage 2 monitoring is the first monitoring the systems have had to conduct. The three training sessions will serve as a reminder for water systems and the newly developed monitoring plan will serve as the training tool.

Other tools to help systems comply with monitoring and reporting requirements include:

- Individual monitoring schedules for each CWS and NCWS. These schedules are based on each system's applicable monitoring waivers and schedule in the standard monitoring framework. To supplement the schedule, staff may enclose or provide an Internet link to the following, depending on that year's monitoring requirements:
- Lead and Copper Report and Consumer Notice of Lead Result Certificate. This form provides a fill-in-the-blank version of the consumer notice for the convenience of systems with limited computer ability.
- Drinking Water Lead & Copper Sampling Instructions. The system may provide this to the occupants that will be performing the sampling.
- Bacteriological Sample Siting Plan. This form incorporates GWR triggered monitoring requirements.
- List of approved laboratories.
- Annual Pumpage/Usage Report For Community Water Supply (applicable to CWS that do not submit Monthly Operation Reports [MOR] with monthly pumpage).
- Cross Connection Report. Systems use this form to demonstrate ongoing implementation of their Cross Connection Control Program. The form was found to be confusing to small system operators because some items did not apply. A simpler version was developed in FY 2010 for systems serving only residential customers.

Venues to communicate monitoring and reporting requirements include:

- Reminder phone calls, e-mails, or post cards.

- Reminder letters. Systems that have not yet completed their annual or less frequent monitoring receive a reminder within 30 to 90 days before the end of the monitoring period. This gives them adequate time to meet the requirement and prevent a violation.
- Lead and copper reminder letters. Lead and copper monitoring is so confusing that this reminder letter also serves as monitoring guidance.
- Lead and Copper 90th percentile letter or action level exceedance letter. These letters outline the results of the system's monitoring and remind systems of further requirements, such as distributing the Consumer Notice of Lead Result, for conducting water quality monitoring or installing corrosion control treatment.
- Consumer Confidence Report (CCR) reminder letter. Each spring, RMD field staff reminds systems of the annual requirement and provides the following tools to comply. A variety of templates are made available including the Internet link to the USEPA *CCRwriter*, as well as the guidance documents *Preparing Your CCR* and *Reporting TOC on the CCR*, as applicable.
- The LHDs inform the NTNCWS of the administrative rule requirement to prepare a water quality report that contains a summary of compliance monitoring data for NTNCWS that serve K-12 schools and day care centers.
- Violation letters, discussed in Section 3.4 below, include requirements to post public notice, when applicable. Templates for typical monitoring and reporting violations, and many state drinking water violations, are available to field staff. Staff either provides the template for the system to edit and place on its own letterhead, or staff may prepare the final public notice for the system to distribute.

Tools to help systems manage the operational requirements include:

- MOR requirement. Systems must report pumpage, treatment information, and operational monitoring conducted during the month. Field staff often instructs operators on how to complete the MOR. Staff reviews each MOR to assure compliance with treatment techniques and to evaluate treatment processes for optimal operating practices. In FY 2009, RMD program staff finalized the MOR template for those water systems using less than complete treatment. The RMD field staff is transitioning CWSs onto this new form when appropriate.
- Emergency Response Plan (ERP) template. In response to administrative rule changes enhancing planning requirements (see Section 5.2.1), four editions of the former Contingency Plan template were combined into one ERP template.
- Privately-owned CWS requirements. Staff of the RMD routinely advises owners, managers, and operators of privately-owned systems about the regulatory requirements for operating a water system. Under Michigan administrative rules, new privately-owned CWS are subject to requirements to ensure they are able to provide an adequate supply of drinking water. Proposed systems must stipulate to certain requirements: obtain a local government's refusal to accept ownership of the system; establish an escrow account available to the MDEQ for immediate repair or maintenance of the system; and agree to seek RMD approval before transferring ownership. These provisions ensure private owners understand their responsibilities prior to establishing the water system. Amended administrative rules, promulgated in December 2009, increases the minimum required escrow amount that has been unchanged since 1979. Owners must still stipulate to

certain conditions, but amendments allowed staff to forgo the cumbersome Administrative Consent Order (ACO) by which to stipulate. Rather, a more streamlined *Stipulate to Conditions for Private Ownership of Public Water Systems* form was developed and is currently used for new ownership.

- Well site inspections and approvals. The LHD and RMD field staff conduct inspections and approvals of wells serving the NCWS and CWS, respectively.
- Guidance documents: The RMD staff develops and distributes guidance documents as needed:
  - *Water Well Disinfection Manual* was updated in 2003.
  - *Suggested Practices* was updated in 2008 and outlines design, construction, and operation of CWS.
  - The *Cross Connection Rules Manual* was updated in FY 2008 and outlines program requirements.
  - *New Community Water System Capacity Guideline Document* developed in 2000 guides field staff and owners of proposed or new systems through the process. It includes a capacity assessment checklist, a financial workbook, policies related to new systems, and templates and forms for planning purposes.
  - Source water protection guidance documents are available for systems pursuing these efforts.
  - NCWS Program guidance documents are, the *Noncommunity Staff Reference Manual*, completed and distributed in 2009, and the *WaterTrack Operators Manual* for LHD staff to implement the drinking water program. For individuals pursuing certification to operate a NCWS, the study guide *Level 5 Drinking Water Operators Guide*, is available on the Internet.
- USEPA tools. In addition to state-developed products, the field staff distributes, as needed, USEPA tools and guidance documents, promotes the Check Up Program for Small Systems and other system capacity development and sustainability tools, and promotes USEPA Webinars.

Field staff hosts and presents material at meetings, conferences, and training sessions throughout the year for water system personnel, consulting engineers, and local decision makers. Ongoing activities include serving as instructors at several operator training courses throughout the year, speaking at other meetings and conferences related to drinking water, and attending USEPA sponsored Web casts. Specific activities in FY 2011 include:

- The RMD field staff presented the *MDEQ Update* at each of eight Michigan Section, American Water Works Association (AWWA), regional meetings updating participants on new rule implementation. New rules updates and training was also presented at RMD field staff meetings usually held quarterly.

A **level 5** operator is certified to operate a Class D-5 treatment system and/or a Class S-5 distribution system. Class D-5 is a NCWS with limited treatment. Class S-5 is a NTNCWS with no treatment, or a CWS with no treatment and a limited distribution system. Examples are a manufactured housing community and a subdivision.

- The MDEQ cosponsors a quarterly newsletter, *Water Works News*, with the Michigan Section, AWWA. The newsletter is distributed to members and all CWS, including approximately 700 privately-owned CWS that might not otherwise receive drinking water-related information. The MDEQ share of the distribution cost is funded by the capacity development set-aside of the DWRP through a Joint Funding Agreement with the Michigan Section, AWWA. Articles in the "MDEQ Updates" section cover timely topics of interest such as compliance with new rules, promotions for new tools or Internet sites, and the latest RMD contact list.
- The NCWS Program staff occasionally participates in association conferences relevant to NCWS systems, such as the Michigan Manufactured Housing Recreational Vehicle & Campground Association, the Michigan School Business Officials, the Michigan Ground Water Association, and the annual Groundwater Conference sponsored by the Michigan Environmental Health Association.
- The RMD program staff worked with the Michigan Department of Community Health, Oral Health Program, to develop and implement a Fluoride Grant Program to promote public water system fluoridation by offering grants to water systems wishing to purchase new or replacement fluoride feed equipment. Six water systems were awarded grants in FY 2011.
- To continue to offer quality training to RMD staff and water systems, the RMD takes advantage of the Webinars. Certified operators can meet continuing education requirements with USEPA or AWWA sponsored Web casts. The RMD promotes Webinars and encourages field staff to forward information to water systems so they can participate at their site. The RMD will continue to take advantage of other opportunities to interact with water systems and their consulting engineers, municipal leaders, and others interested in drinking water issues.

### 3.4 Enforcement

Target: CWS and NCWS

Evaluations and compliance information become the basis for enforcement.

In an FY 2009 effort to gain consistency across districts, templates were developed for violation letters and further refined in FY 2010. When a system violates a requirement they should receive a letter that clearly states what was violated, when the violation occurred, how to return to compliance, and when to respond. It is believed that enforcement will be viewed as more predictable; therefore, systems will make a greater effort to comply to avoid enforcement.

When systems fail to return to compliance, escalated enforcement, including ACO and MDEQ orders, can be initiated. Before escalated enforcement is used, many systems return to compliance when they are assessed administrative fines for monitoring and reporting requirements. Water systems generally remain in compliance with monitoring and reporting requirements after receiving a fine. During FY 2009 to 2011, the number of fines was 27, 47, and 9, respectively. This represents 51 different CWS that received a fine at least one time for at least one violation in the three-year period. Failure to monitor for various chemical contaminants lead the way with 36 violations, followed by 28 total coliform monitoring violations, and 19 failures to monitor for lead and copper. Small systems represent all but five of the systems that received fines, which is

expected as large systems typically have the resources and systems in place to ensure monitoring is timely and performed correctly.

When a fine is not applicable or does not prevent further violations, the RMD moves on an escalating series of enforcement actions that include a Notice of Violation, ACO, and in rare cases, a MDEQ order. However, field staff prefers technical assistance over enforcement to bring systems back into compliance. There were no ACO's initiated in 2011.

To streamline enforcement, the district-initiated ACO (DACO) is to be used under certain circumstances instead of the traditional ACO. This process bypasses enforcement staff involvement; the RMD field staff drafts the DACO using templates and calculates penalties based on enforcement staff guidance. In July 2011, Lakeside Estates entered into a DACO with RMD, as they did not have the minimum number of wells with separate pumping units as required. The DACO required the owner of the system to purchase potable water from a regional system or construct a second well within six months. Lakeside Estates is currently meeting the compliance schedule and field staff expects all required actions to be completed.

Some water systems are not willing to enter into an ACO. In those cases, the RMD must escalate the enforcement level to a MDEQ order. Recently, Heritage Apartments, in Oakland County, has been referred to our enforcement staff for a MDEQ order. This water supply system has been rated deficient on several of the sanitary surveys for failure to meet firm capacity requirements with a second well, numerous monitoring violations, a Significant Deficiency Violation Notice, and has refused to enter into an ACO.

Each LHD is required to conduct enforcement necessary to address NCWS in noncompliance. The RMD field staff assists the LHD upon request, and in extreme cases, the RMD central staff may take the enforcement lead or refer it to the USEPA, Region 5, when state resources are unavailable. Typical tools used by the LHD include administrative fines, informal hearing, local license suspension procedures, and bilateral compliance agreements (similar to the DACO for CWS).

### *3.5 Operator Training and Certification*

Target: CWS and NCWS

Due to amendments to Act 399, a properly certified operator must be available at each of the 1,406 CWS and 1,371 NTNCWS and at the 66 transient NCWS that employ treatment for public health purposes. Operators maintain their certification by meeting continuing education requirements through training offered in a variety of venues.

#### *3.5.1 Operator Training and Certification Unit (OTCU)*

The RMD, OTCU, provides over 30 training courses each year and certifies nearly 80 organizations and training providers that offer other opportunities for continuing education including online courses. The OTCU has also approved a list of hands-on training or "HOT" programs that can provide operators with at least 50 percent practical experience in a three or more hour training session.

The OTCU also administers the Expense Reimbursement Grant (ERG) Program for operators employed by systems serving fewer than 3,300 people to cover approved training registration fees up to \$300 per individual. For more information, see the *2011 Operator Certification and ERG Annual Report*, dated September 19, 2011, submitted to the USEPA.

Many of the training courses coordinated by the OTCU are taught by RMD field staff under a Joint Funding Agreement between the MDEQ and the Michigan Section, AWWA. The RMD treatment specialist schedules instructors and also instructs both the Basic and Advanced Cross Connection Control seminars and the Water Treatment and Distribution System 2.5-day Short Courses.

During on-site visits or other consultation opportunities, field staff discuss the certification status of the operator and may suggest training sessions to hone skills or prepare for the examination required to obtain or to upgrade certification.

### 3.5.2 Small CWS and NCWS Training

Under contract with the RMD, 16 LHDs provide continuing education for the level 5 operators. The intent is to provide regional training for NCWS, but any operator employed by a CWS with no treatment and a limited distribution system may attend. As stated in the *2011 Operator Certification and ERG Annual Report*, 148 operators earned continuing education credits and another 104 attended to prepare to write their level 5 exam.

Staff of the NCWS Program conducted train-the-trainer sessions for LHD staff. Topics range from current requirements and practices to discussions of new requirements and regulations. Surveillance visits and sanitary surveys are additional opportunities for the LHD staff to provide training for NCWS operators.

For the past several years, RMD staff has conducted training specifically for small CWS. Attendees are primarily operators, managers, or owners of manufactured housing communities, though in recent years an increasing percent of attendees are from other types of small CWS. General topics covered new regulatory requirements, monitoring and reporting, communicating with the public, and operational issues. Special topics change each year to keep the participants interested. The special topic in the 2011 training was "Cleaning Small Diameter Water Mains." A total of 148 persons attended at one of four locations around the state.

### 3.6 DWRF

Target: CWS and Nonprofit NCWS

The 1996 Amendments to the SDWA authorized the creation of a revolving fund to provide low-interest loans for repairs or enhancements to help water systems comply with the SDWA. The capacity development provisions of the SDWA are funded through the DWRF allotment.

Michigan's DWRF is co-administered by the MDEQ and the newly established Michigan Finance Authority. The MDEQ handles all programmatic issues, while the Finance Authority serves the DWRF Program with its financial expertise. Prior to the creation of the DWRF, project financing for CWS was left largely to the local unit of government or to individuals investing in their own systems. Michigan's drinking water program relies heavily on proper water system design and construction to prevent jeopardizing the safety of both the source and finished water. To that end, priority of DWRF projects favors those communities that are participating in a Source Water Protection Program.

In FY 2011, \$41 million in low-interest loans was committed for 15 projects bringing the total since the fund's inception in 1998 to \$692 million for 238 projects. Some systems receive commitments from the DWRF but may not be ready to proceed with the project

"In her second executive order of 2010, Governor Jennifer Granholm has eliminated 10 state finance authorities [including the Michigan Municipal Bond Authority, that formerly coadministered the DWRF] and combined all of their functions into one agency. The new Michigan Finance Authority, established under E.O. 010-2, will help make state government more 'efficient, responsive and cost-effective,' Ms. Granholm said. The authority will be an autonomous agency within the Department of Treasury."

*Gonger News Service Michigan,*  
Thursday, March 4, 2010



until they are able to assure the revenues will be generated to repay the loan. In these cases, the system remains on the priority list for the next year. Of the projects committed, 188 have been completed for a total cost of \$471 million and the loan payments are revolving back into the fund.

Commitments in FY 2011 include projects to increase systems' capacity to reliably provide an adequate supply of water. Many of the projects involve replacing aging distribution infrastructure, others to provide redundancy, and still others to meet drinking water standards. Plainfield Charter Township, in Kent County, is the year's largest project of \$7.75 million. The Township will construct a 2-million-gallon reservoir at the water treatment plant, a 20-inch ductile water main crossing the Grand River, install a pressure reducing control valve, and replace water mains at various locations. The city of Holland, in Ottawa County, will construct a 36-inch emergency transmission line from the city of Wyoming's water treatment plant. This also serves as a secondary goal of a supplemental water source to provide Holland with an additional 5 million gallons per day. Other projects improvements include a new transfer pump at the treatment plant and a new generator to provide additional capacity for treatment plant control components. This project also exceeded \$7 million in water system improvements.

### *3.7 Source Water Protection*

Systems are continuing to take steps to protect their drinking water sources.

#### *3.7.1 Groundwater Source Protection*

Target: Municipal CWS and Not-for-Profit NCWS

Minimum isolation areas around drinking water wells are established in the Michigan well construction code and in Act 399. Programs in the MDEQ, such as the Groundwater Discharge Permit Program and the On-Site Waste Water Program, reference these isolation distances as they review applications for discharge permits or site approvals to assure the facility or activity will be protective of the drinking water source. Act 399 requires the isolation area around a proposed well site be owned or controlled by the CWS or the NCWS.

To expand beyond this long-standing but minimal concept of source water protection, RMD staff are actively encouraging municipalities to also participate in Wellhead Protection Program (WHPP) activities and apply for a WHPP grant to fund the activities. Municipalities are encouraged to apply for a WHPP grant using a 50 percent local match to fund activities involved in protecting their public water supply well capture zones (based on a ten-year time-of-travel). Of the 444 municipal systems in Michigan using groundwater as a source of drinking water, 249 are involved in some aspect of wellhead protection, such as performing a delineation, inventorying the potential sources of contamination, and planning for emergencies. Of those 249 systems, 187 have completed all the steps and have an approved WHPP. As a result, 87.6 percent of the population of the state served by municipal systems using groundwater is in communities taking action to protect their groundwater sources or purchase water from communities involved in protecting their sources. The WHPP grants for FY 2011 awarded \$297,600 to 27 communities as compared to the WHPP grant cycle for FY 2010 that awarded \$642,900 to 43 communities. Lyon Township was the only new grantee for FY 2011.

The MDEQ, Drinking Water and Environmental Health Section, through a contract with Michigan State University's Department of Civil and Environmental Engineering, developed the Michigan Groundwater Management Tool (MGMT), formally known as

Michigan Interactive Groundwater for Wellhead Protection. The MGMT can scientifically map wellhead protection areas for public water supply wells using information from existing statewide databases such as Wellogis, Map Image Viewer, and the Groundwater Inventory Mapping project. The Wellhead Protection Area (WHPA) is the surface and subsurface area contributing groundwater to the well. The Michigan's WHPP defines the WHPA with a 10-year time-of-travel. This provides a reasonable length of time to respond to environmental problems within the WHPA while providing an area that can be reasonably managed. The MGMT has developed surprisingly accurate predictions of spatially-detailed and representative groundwater flow patterns and WHPAs. Most of these MGMT delineations closely parallel traditionally developed WHPA's, which cost an average \$36,000.

To promote the benefit of MGMT, the MDEQ and Michigan State University recently hosted a free one-day training session for community water supplies, nontransient, noncommunity water supplies, local health departments and MDEQ staff. Water supply representatives in attendance were given their water system well logs, source water assessment information, and WHPA maps. Further information was provided specific to their water supply, and how groundwater quality can be protected. The RMD, Drinking Water and Environmental Health Section, is in the process of redefining "Substantial Implementation," allowing smaller systems to obtain this source water protection status, while increasing Michigan's population that is protected by these implemented activities. The next workshop will be held in Greenville in December, with more workshops planned in 2012.

### 3.7.2 Tools as a Result of Water Withdrawal Legislation

Target: CWS, NCWS, and Other Interested Parties

The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, was amended in 2006 and further amended in 2008 in response to increased water use demands, pressure to divert water outside the Great Lakes Basin, and an increase in groundwater use conflicts. The legislative amendments were intended to enhance the state's ability to manage the water resources of Michigan.

Since 2006, any proposed new or increased large quantity withdrawal, defined as a water withdrawal of 70 gallons per minute or more, requires an environmental assessment and approval prior to making use of the water resource. An aspect critical to the continued operation of CWSs in accordance with the law governing management of Michigan's water resources was the grandfathering of all preexisting water uses. Referred to in the law as "baseline capacity," the RMD established baseline capacities for each existing CWS in April of 2007. New or increased large quantity withdrawals above the baseline capacity require an assessment to determine the likelihood the withdrawal will harm fish populations in nearby streams, rivers, and lakes. CWSs are allowed to construct additional capacity in exchange for the elimination of the established baseline capacity. The establishment of said baseline capacities allowed for the continued operation of CWSs throughout the state consistent with their historic water use trends and previous investments in capacity development.

### 3.7.3 Surface Water Source Protection

Target: CWS and NCWS Using Surface Water

The Surface Water Intake Protection Program (SWIPP) is the surface water counterpart to the WHPP. Under this program, communities develop partnerships with surrounding communities to identify and take action to protect the area around the intake. The

seven communities that have completed an SWIPP serve small- to medium-sized populations; one of these, the city of Escanaba, was approved in FY 2011. A funding source for SWIPP grants has been identified, and a matching grant program equivalent to that used in the WHPP was incorporated into the administrative rules in December 2009. Like an approved WHPP, an approved SWIPP will result in additional priority points being awarded to DWRf applicants, encouraging more CWS to develop one. A matching grant program, equivalent to that used in the WHPP, is being considered when funds become available and may stimulate activities in a SWIPP by larger municipalities.

Monitoring can alert utility personnel of changes in water quality in time to respond quickly. To achieve this in the connecting channels between Lakes Huron and Erie, the RMD worked with federal and local governmental agencies to install a continuous, real-time water quality monitoring network in the St. Clair River, Lake St. Clair, and Detroit River. Thirteen drinking water treatment facilities equipped with a range of analytical devices have continued to operate in FY 2010. The monitoring system includes data transmission, data visualization, automated notification/alarm service, data archiving, and a publicly accessible Web site for data retrieval. In addition, rapid toxicity test equipment is being used to monitor water distribution systems in Southeast Michigan served by these surface water intakes. Nearly instantaneous communication is key to protecting surface water intakes in the Lake Huron to Lake Erie corridor because of the rapid rate of flow, periodic chemical spills, and corresponding changes in water quality. The city of Monroe in Monroe County is the last plant located on the connecting channels and is scheduled to receive the monitoring equipment in FY 2011. Unfortunately, financial issues may jeopardize the long-term governance and funding of the Huron to Erie Alliance for Real-Time Monitoring and Information System.

### *3.8 Financial Assessments*

Target: CWS Serving Fewer Than 10,000 People That is Either Municipally Owned or Subject to Association Bylaws

To help existing CWS improve financial capacity, the RMD conducts financial assessments of systems that serve a population of less than 10,000 and that could benefit from a financial assessment. As a result, several systems that are currently in compliance, but are concerned about future challenges, such as complying with new rules, are making progress toward that end by improving their financial capacity. Funding for these assessments is from the technical assistance to small systems set-aside of the DWRf. Systems serving more than 10,000 people may also participate in the program, but the funding would be drawn from the capacity development set-aside.

A financial expert in the DWRf Program conducts the assessment of the community's existing financial health and develops a Financial Action Plan (FAP). The assessment is a review of financial and legal documents and an on-site meeting with system representatives. The financial expert has found that the most productive on-site meetings are those that are attended by the system operator, a local official, and the RMD field staff person that oversees the water system. This group mix seems to help communication among the water supply, the local officials, and the RMD field staff, especially when a technical capacity project must be funded with increased rates or an improved budgeting process. All three parties will continue to be invited to the on-site meeting.

An FAP is a tailor-made, comprehensive plan to strengthen the system's financial situation based on the assessment. Short- and long-range goals are identified in the FAP followed by a step-by-step process to reach the goals. Useful tools to help

complete the steps are included with the FAP. The assessment is not designed to provide funding; however, financing options are discussed at the on-site meeting. Further information on obtaining funding is provided with the FAP. The system is expected to carry out the FAP, and the RMD is available to assist when requested. The FAP is also intended to be a guide for the field staff. An outline of a typical assessment report is included in Appendix B.

Applying for a DWRF loan can be a daunting task for small cities and villages. However, some communities that undergo a financial assessment develop the financial acuity and motivation to apply for a loan through the DWRF or the Rural Utilities Service of the USDA-RD. In other cases, as communities gather their financial documents, some decide to use the information to pursue funding rather than undergo a financial assessment.

In FY 2011, one financial assessment was completed. It was recommended that the city of Burton in Genesee County implement a method of budgeting to fund their capital improvements plan and develop a rate setting methodology based on fixed/variable expenses. Another recommendation was to strengthen the water use ordinance, which will help support the rate setting structure.

### 3.9 Security

Target: CWS and NCWS

The MDEQ, Water Security and Emergency Management Program, is responsive to the various federal programs and the needs of the public water systems. Planning, training, and coordinating are all a part of the effort to emphasize emergency management for all hazards; terrorism, and malevolent acts as well as weather-related incidents and accidents.

All-day training was held for the members of the Michigan Section, AWWA, at the *7th Annual Water Security Summit: Water Security and Emergency Management*. Topics included United States Army portable water treatment units, tabletop exercises, the Michigan Water and Wastewater Agency Response Network, Risk Management Plans, and Security and Preparedness.

The USEPA has eliminated the Water Sector Security funding as of FY 2010. As a result, further contracting is curtailed. To help offset that loss of funds, grant applications were submitted to the Michigan State Police, Emergency Management and Homeland Security Division, for the FY 2010 United States Department of Homeland Security to continue the efforts of recent years to conduct tabletop exercises and to train small water systems in emergency response planning. These proposals did not receive funding; however, we have recently received a multimedia State and Tribal Assistance Grant to continue water system security training.

Field staff will continue to be involved in safety and security enhancements through the construction permit process and the operation of new systems.

### 3.10 Electronic Reporting and Data Management

Target: CWS and NCWS

Electronic reporting and data management are tools to help the central office to identify and analyze statewide trends in contaminant levels, treatment, and distribution operations, and compliance. This ability will allow the RMD to focus assistance more effectively.

### 3.10.1 Electronic Drinking Water Reporting (eDWR)

Target: CWS Primarily, Though Elements Designed for Laboratories That Also Serve NCWS

The RMD is working to develop electronic reporting systems to provide more convenience to water systems and more accurate and complete assessment of capacity. The successful implementation of the Internet-based reporting system for discharge monitoring reports prompted Michigan to expand the project to include electronic Drinking Water Reporting (eDWR.) The eDWR System will provide for online submittal of drinking water laboratory results and treatment plant operational data. The collection of data will allow the RMD to query certain parameters to assess capacity on a systemwide and statewide basis. Although competing priorities have delayed the launch of this tool, progress is still being made toward implementation. Future plans include providing other required reports online.

### 3.10.2 Tracking Compliance Using Safe Drinking Water Information System/State (SDWIS/State)

Target: CWS

SDWIS/State, the federally supported database for tracking drinking water compliance activities, stores actual analytical results entered either manually or via eDWR reporting discussed above. This tool allows for more automated compliance determinations, which is particularly necessary when staff resources are stretched. In FY 2005, the CWS Program began tracking Total Coliform Rule compliance monitoring in SDWIS/State, and in FY 2010, this was expanded to include Lead and Copper Rule tracking. In addition, the CWS Program has been preparing compliance monitoring schedules for other rules for migration from the program's legacy database to SDWIS/State. The project will take at least through FY 2012 to complete.

### 3.10.3 WaterTrack

Target: NCWS

The LHD staff use the WaterTrack database to track NCWS inventories, certified operator information, sanitary survey reports, capacity development, construction permits, monitoring results, monitoring violations, violations of maximum contaminant level (MCL), and NCWS compliance reports. The information is monitored by the MDEQ staff that oversees the NCWS Program. WaterTrack uses an outdated platform, is largely unsupported, and does not contain capability to track all current rule requirements. A rewrite or transfer to the SDWIS/State is necessary in the very near future.

## 4 Identify Existing Systems in Need

The strategy used to select and prioritize systems for assistance is outlined in the *Capacity Development Strategy for Existing Public Water Systems*, dated August 1, 2000, and remains unchanged. Briefly, the RMD looks at all of the following criteria:

- Compliance information.
- Sanitary surveys and results of surveillance visits.
- Construction permit bans and correspondence from the RMD addressing potential bans.

- Operation and maintenance concerns.
- Field staff input.

The sanitary surveys and surveillance visits are ongoing, and the frequency with which systems are identified for capacity assistance is continual.

## **5 Identify Capacity Development Needs and Provide Assistance**

In recent years, the economy has forced severe budget cuts. The budget woes are not limited only to state government, but shared with LHD and public water supplies. Early in 2010, several state departments were reorganized including merging two into the MDEQ. A long anticipated "early out" incentive for state employees was enacted. The upcoming exodus of institutional knowledge is creating a deep feeling of uncertainty. How to do more with less in FY 2011 and beyond is a paramount concern and factors into every decision. Working under ongoing resource challenges, the RMD still identified needs and took steps to address them in 2011.

In response to budget cuts, the MDEQ recognizes the importance of the Drinking Water Infrastructure Needs Survey to ensure that a true picture of the infrastructure needs are presented to Congress and that Michigan maintains its fair share of the annual appropriation. This year, MDEQ field staff has helped many of the 63 water systems selected to participate in the needs survey to identify all eligible needs and provide acceptable documentation.

The RMD believes the four areas identified in the 2009 edition of this report still needed work. In addition to those areas, the RMD concentrated on recurring total coliform positive events. Finally, RMD recognized the needs that exist at the national level and is participating in workgroups to tackle them.

### **5.1 Minimize Recurring Total Coliform Positive Events**

The NCWS Program became increasingly concerned with recurring total coliform positive events and MCL violations, in spite of an excellent compliance rate among NCWS overall. The recurring nature of these events represents a potential exposure to unsafe drinking water and a significant expense of resources. It was determined that changes are necessary to improve identification of problem systems and resolve them—in other words "find and fix" the problem once and for all. This effort requires partnering among the RMD, LHD, and well drilling contractors.

To determine how best to accomplish this, a survey was conducted to identify causes of ongoing positive events and the means and practices used to investigate and resolve those events. Two observations were made. First, sanitary well construction and disinfection procedures on new wells could minimize recurring positives once the new or replacement well is in operation. Second, improving the effectiveness of identifying causes, corrective actions, and follow-up should reduce the duration of the event, public exposure, and expenditure of resources.

Recommendations were to improve training for well drillers and LHDs and to identify a means for more effective monitoring under certain circumstances. It is believed that a better monitoring protocol for new/replacement wells and for existing wells with positive results may identify ineffective disinfection practices before a well is returned to service and, thereby, prevent these wells from evolving into recurring problems. As a result, an effort is being made to pool the resources of the RMD, the LHDs, and the well drillers to get back to the basics of understanding coliform, practicing sanitary well construction,

applying proper disinfection, developing and conducting adequate monitoring protocols, and implementing good investigative techniques.

Several activities are ongoing:

- Local Health Department (LHD) Evaluations:

Due to the success of the “Pilot” NCWS annual program evaluation process as discussed in last year’s report, interactions with LHDs in the field has improved. The positive feedback has lead to mapping out other changes in the programs to promote a continual consultation review of LHDs all year long. An emphasis was placed on updating program goals, indicators and outcomes relating to the oversight of the LHDs. Stakeholder meetings will begin in FY 2012 to comment on this improved LHD evaluation strategy. The modification to our way of doing evaluations will: address noncompliance issues proactively instead of potentially addressing them several months to a year later; result in state staff having a smaller geographical area to cover, allowing them to be more readily available for consultations with LHD staff; allow the state to provide more time in the field working directly with LHD staff conducting sanitary surveys, resolving violations, issuing construction permits, overseeing difficult treatment systems, and focusing on those facilities who are in routine noncompliance with both monitoring and MCL violations. Additionally, there will be more emphasis placed on sound well construction principles, the foundation of drinking water public health protection.

- Training of LHD staff:

The MDEQ, in conjunction with the Michigan Environmental Health Association (MEHA), provided LHD training in the field this past year by participating in a well drilling demonstration at a NCWS in Berrien County. It is the state’s goal to provide more of that type of training regionally throughout the state. The MDEQ also continues to provide an annual hands-on training activity at the MEHA Annual Education Conference by providing a show and tell of various well components, both approved and unapproved. Staff of the MDEQ also continues to be invited to present at the Michigan Ground Water Association’s annual conference that is attended by LHD personnel. The MDEQ’s down-hole camera has been used at several Type II well investigations to investigate turbidity and chronic coliform bacteria problems. This type of in-the-field outreach will continue, along with additional training in troubleshooting chronic coliform bacteria issues.

- Building Partnerships:

Two Local Health Departments/Health Districts (11 Counties) have volunteered to participate in the USEPA’s Small Systems Initiative (SSI) For Schools and Daycares. This partnership among the MDEQ, USEPA, and LHD is to help increase or maintain compliance at these facilities. This is especially important because the population at these facilities tends to be more susceptible to the effects of environmental pollutants. This is an ongoing project. Outreach information and training was developed to help these owner/operators become more informed on their responsibilities and the potential risks to their supplies. This SSI partnership improves communication, working relationships, and understanding which in turn should reduce the duration of a TC (is this total chlorophyll?) Positive event and exposure. This is an ongoing project.

- **New Manual:** The RMD has finished drafting the Abandoned Water Well Plugging Manual focusing on methods, materials, equipment, and requirements. Beginning in 1998, the MDEQ conducted abandoned well management training for well drillers and LHDs, the agency that requires plugging of existing wells when a replacement well is drilled. The training emphasized cooperation between the drillers and their LHD, and as a result, a total of over 110,000 abandoned wells have been plugged, and the plugging rate approaches 90 percent at residential replacement well sites. Use of this new manual will continue to assure plugging is done properly.

In FY 2012, the RMD will continue to work more closely with the Michigan Ground Water Association, which represents well drillers, to find ways to more effectively prevent recurring positive events.

## *5.2 Follow Up on Needs Identified in 2009 and 2010*

Areas identified to be addressed in FY 2009 are continuing to be addressed.

### *5.2.1 Implement New Federal Rules*

The RMD program and field staff has continued to host and participate in training on new rules. As mentioned earlier, new rule information was presented at each of the eight Michigan Section, AWWA regional meetings, at each of the four small systems CWS training, at quarterly field staff meetings, and during LHD visits by NCWS staff. Staff of the RMD has recently finalized the Stage 2 DDBPR monitoring plan to make it shorter and more concise. Additionally, two trainings have been held to help CWS comply with Stage 2 DDBPR requirements and assist in completing their monitoring plans prior to beginning Stage 2 monitoring. Reminders of new rule changes are included in correspondence with water systems whenever possible.

As mentioned in the *2011 Operator Certification and ERG Annual Report*, RMD staff will continue available training in FY 2012 targeting small system and NTNCWS certified operators. Training programs will include modules developed by the MDEQ, also being used by LHD, and they will develop new training modules to keep certified operators updated with regulatory compliance, roles, responsibilities, and latest trends and technology in operating, maintaining, and managing public water supplies.

### *5.2.2 Capture Sanitary Survey Data*

Detailed sanitary survey data is captured on individual Excel spreadsheets for every groundwater and surface water CWS. To create a tool to enhance decision making, the RMD program staff is continuing to investigate options to capture that data in a query able format.

Currently, RMD staff track basic survey data, specifically survey date, rating of the eight required elements, and significant deficiency tracking in a central database. The RMD hopes to fully transfer this basic survey tracking to SDWIS/State in the near future.

### *5.2.3 Implement Newly Revised Nonfederal Provisions of the Administrative Rules*

The RMD is continuing to implement nonfederal provisions of the administrative rules that were revised along with the adoption of the new federal rules in 2009. The purposes of these revisions, which were discussed more fully in the 2010 report, are listed below:



- Improve capacity in very small systems and in licensed facilities.
- Provide oversight to NCWS that treat to improve aesthetics.
- Diversify the type of operator training received and update operator certification rules.
- Enhance planning by expanding the requirements of the general plan, reliability study, and contingency plan.
- Provide a source water protection grant program for surface water systems.
- Enhance technical capacity.

The operator training effort included the development of an operator certification program fee package to enable the OTCU to continue offering certification exams, renewals, and Advisory Board training as in the past. On September 20, 2011, Governor Snyder signed House Bills 447 and 448 into law. These bills contain the specific details of the program fee package and the collection of fees for the services offered by the OTCU.

#### 5.2.4 Encourage Asset Management

As the infrastructure gap continues, field staff is stressing asset management concepts during interactions with CWS and their local decision makers. Good water system operation and management cannot be mandated, though the RMD hopes the enhanced planning provisions of the recently amended administrative rules will foster better water system management. Several staff attended the USEPA hosted Webinar, *Asset Management, Implementation Benefits for State Drinking Water Programs*, to better understand ways to promote asset management to their systems. In April 2011, staff and system operators also attended the Webinar, *Asset Management 101*, hosted by the USEPA.

#### 5.3 Participate in National Workgroups

Program staff in the RMD is involved in national workgroups with other states, USEPA headquarters and regional offices, the Association of State Drinking Water Administrators, and others to improve implementation or affect change to federal regulations and national policy. An NCWS Program representative has provided ongoing input to those working to revise the Total Coliform Rule. The RMD water treatment specialist is working with other states and the USEPA to develop recommendations for the anticipated long-term revisions to the Lead and Copper Rule. Also, an RMD manager is currently a board member with the Association of State Drinking Water Administrators, participates in a needs survey workgroup, and with a nation per chlorate workgroup. Participating in national efforts to improve implementation of the drinking water program will likewise improve systems' overall capacity.

### 6 Review Existing Systems Program Implementation and Address Findings

Sanitary surveys are the primary tool to evaluate capacity and identify needs for specific systems. A long-standing MDEQ policy dictates sanitary survey frequencies for all types of CWS and NCWS. Follow-up on deficiencies in any system has been a long standing practice and is required of the LHD under contract with the MDEQ. As stated in last year's edition of this report, the RMD was driven by the federal GWR and the requirement to identify and pursue resolution of significant deficiencies to draft

two policies. The first policy sets frequencies for sanitary surveys and the second sets criteria to identify significant deficiencies and establishes procedures to resolve them. Both policies became effective in January 2010. There have been seven significant deficiencies identified in FY 2010 and six identified in FY 11. All CWS have met their deadlines or escalated enforcement is in place with an acceptable compliance schedule to resolve the deficiencies.

Between sanitary surveys, RMD field staff makes routine on-site visits to review the technical, managerial, and sometimes financial aspects of a CWS and to establish channels of communication with the CWS. The knowledge and familiarity gained by both parties as a result of routine visits are keys to maintaining a cooperative relationship in achieving mutual goals. The frequency of these visits has been dictated in policy based on long-standing practice.

Requests for financial assessments continued to remain sluggish this year. Rather than attempt to increase the number of financial assessments, the RMD has begun to follow up with previously assessed water systems informally during routine on-site visits by field staff and more formally by the financial expert that conducted the original assessment. One assessment is currently being conducted for the Beecher Metropolitan District in Genesee County, and one assessment was completed for the city of Burton, also in Genesee County.

## **7 Modify Existing Systems Program Strategy**

The strategy remained unchanged during the reporting period. The MDEQ is continuing to implement the original strategy of moving from capacity assessment through assistance to development.

## **8 Summary**

Michigan is continuing to implement a program for new systems and a strategy for existing systems as set forth in May and August 2000, respectively. The new systems' program retains the legal authority and the control points established in 2000. A list of new systems in the last three years is included in this report and indicates which systems have appeared on an SNC list in FY 2009 and ETT in FY 2010 - FY 2011. New NTNCWS appeared on an SNC list or ETT primarily due to a single failure to monitor as required in the initial monitoring period.

The strategy for existing systems established in 2000 has remained the same though the specific tools and activities used to implement the strategy have been added, removed, or altered as needed. The drinking water program continually identifies systems in need of capacity development primarily through the sanitary survey process. During the reporting period, needs were identified and discussions were held to determine what areas could be enhanced. A review of implementation of various activities of the strategy occurred and changes were made. The strategy was not modified.

## Appendix A: List of New Systems

**New CWS  
FY 2009 through FY 2011**

PWSID <sup>1</sup>	CWS Name	FY Active in SDWIS/State <sup>2</sup>	Date Active CWS	SNC <sup>3</sup>	ETT <sup>4</sup>
MI0000088	ALBEE TOWNSHIP	2011	04/11/11		
MI0040416	SUNSET ESTATES GAYLORD	2011	11/01/10		
MI0000322	AUSTIN COMMONS II	2010	12/21/09		
MI0001258	CEDAR CREEK TOWNSHIP	2010	11/06/09		
MI0004778	NORTH MOORE ESTATES	2010	09/20/10		
MI0006693	TULLYMORE CLUBHOUSE AND CAMELOT VILLAGE	2010	07/01/10		
MI0061700	CURRY HOUSE	2010	08/02/10		
MI0002291	FILLMORE TOWNSHIP	2009	10/30/08		
MI0062720	GOLDEN ORCHARDS	2009	08/04/09		

<sup>1</sup> Public Water System Identification Number

<sup>2</sup> Safe Drinking Water Information System/State

<sup>3</sup> CWS indicated by "Yes" are on the FY2009 SNC list.

<sup>4</sup> CWS indicated by "Yes" are on the FY2010 or FY2011 ETT list with a score of 11 or higher.

FY	New CWS	SNC	ETT
2011	2	0	0
2010	5	0	0
2009	2	0	0
<b>Total</b>	<b>9</b>	<b>0</b>	<b>0</b>

**New NTNCWS  
FY 2009 through FY 2011**

PWSID <sup>1</sup>	NTNCWS Name	FY Active in WaterTrack <sup>2</sup>	Date Active NTNCWS	SNC <sup>3</sup>	ETT <sup>4</sup>
MI0120220	CRYSTAL SPRINGS ESTATES	2011	12/14/10		
MI2521607	ULTRA DEX TOOLING SYSTEMS	2011	01/25/11		
MI4120960	RIVERIDGE PACKING - WORTH BUILDING	2011	10/21/10		
MI4120961	CAL PLEX	2011	04/18/11		
MI4720641	STEP BY STEP EARLY LEARNING CENTER	2011	01/07/11		
MI4720642	ALWAYS UNIQUE CHILDCARE	2011	11/29/10		
MI4720643	ASPEN TECHNOLOGIES	2011	03/09/11		
MI4720644	DYNAMIC TECHNOLOGIES LLC	2011	03/16/11		
MI4720647	COLE TAYLOR MORTGAGE - NORTH	2011	06/06/11		
MI4720648	COLE TAYLOR MORTGAGE - SOUTH BLDG	2011	06/06/11		
MI7020654	CONSUMERS ENERGY TRAILER WELL	2011	08/12/11		
MI8020565	MBG MARKETING	2011	02/03/11		
MI8120604	JELLYBEAN DAYCARE AND PRESCHOOL	2011	12/16/10		
MI0320651	PARIS RIDGE ELEMENTARY SCHOOL	2010	08/23/10		
MI0320654	MICHIGAN FINE HERBS	2010	04/05/10		
MI2521363	DIPLOMAT PHARMACY	2010	04/08/10		
MI2521460	PEYTON'S LEARNING PLACE	2010	04/21/10		
MI3320205	MUNTERS	2010	08/30/10		
MI4120954	RIVERIDGE PACKING - STORAGE	2010	12/03/09		
MI5220200	TEACHING FAMILY HOMES SCHOOL	2010	05/17/10		
MI5420424	BIG RAPIDS TOWNSHIP INDUSTRIAL PARK	2010	03/01/10		
MI7520304	MONSANTO	2010	02/23/10		
MI2120212	HYDE PROPERTIES	2009	8/12/09		
MI2521602	GOODRICH PLAZA	2009	04/24/09		
MI3020302	BIRD LAKE BIBLE SCHOOL	2009	10/21/08		
MI3320202	DART CONTAINER III	2009	09/03/09		
MI3820830	M.D.O.T. SERVICE CENTER	2009	02/10/09		
MI4120946	MEIJER #248 SOLON TWP	2009	04/10/09		
MI4520263	NORTHPORT POINT	2009	10/22/08		
MI4720097	FACE PROPERTIES LLC	2009	10/29/08		
MI4720346	OLD 23 COMMERCE CENTER	2009	02/11/09		
MI4720440	20TH CENTURY BUILDING COMPANY	2009	10/16/08		
MI4720465	20TH CENTURY BUILDING COMPANY	2009	10/17/08		
MI4720636	FOR KID'S SAKE EARLY LEARNING CENTER/ ECONO P	2009	09/24/09		
MI4720781	20TH CENTURY BUILDING COMPANY	2009	10/17/08		
MI4720899	DR. MIKA'S MEDICAL OFFICES	2009	10/23/08		
MI5620085	KIDS TIME	2009	01/07/09		
MI6322874	OAKWOOD ELEMENTARY	2009	08/19/09		
MI6520304	WBRC SCHOOLS - KIRTLAND BUILDING	2009	08/26/09		
MI6720166	NESTLE WATERS NORTH AMERICA	2009	04/03/09		
MI6720192	MUSKEGON RIVER YOUTH HOME S.O.	2009	03/03/09		

# Annual Report on Capacity Development Program – FY 2011

PWSID <sup>1</sup>	NTNCWS Name	FY Active in WaterTrack <sup>2</sup>	Date Active NTNCWS	SNC <sup>3</sup>	ETT <sup>4</sup>
MI7520302	FRESH SOLUTION FARMS, LLC	2009	10/21/08		

<sup>1</sup> Public Water System Identification Number

<sup>2</sup> WaterTrack is the database of the NCWS, from which SDWIS/Federal is populated.

<sup>3</sup> NTNCWS indicated by "Yes" are on the FY2009 SNC list.

<sup>4</sup> NTNCWS indicated by "Yes" are on the FY2010 or FY2011 ETT list with a score of 11 or higher.

FY	New NTNCWS	SNC FY2009	ETT FY2010-2011
2011	13	0	
2010	9	0	
2009	20	0	
<b>Total</b>	<b>42</b>	<b>0</b>	<b>0</b>

Correction from 2010 Report: FIVE CAP INC - NEWAYGO CENTER MI6220251 was mistakenly reported as new in FY2010. This system has existed since at least 2006 and should not have been reported as new in 2010.

## **Appendix B: Outline of a Typical Financial Assessment and Financial Action Plan**

### ***Financial Assessment***

Introduction: Population, location, transportation routes, and community characteristics; description of the water system and major projects or concerns such as expansion, securing loans, and meeting new drinking water standards; and major financial shortfall such as the need for a rate methodology.

Requested Information: Budget, last two years of audited records, water use and water rate ordinances, latest rate ordinance or resolution, recent rate or feasibility study, and contract or service agreements with outside customers.

Submitted Information: List of information provided.

Analysis: Summary or highlights of each of the documents provided by the supply.

On-Site Meeting: Date and attendees; and list of items discussed, such as the financial concerns, the billing method, and major recent projects.

### ***FAP***

*Goal One: Develop the financial capability to fund present and future needs.*

Task 1: Develop a capital improvement projects plan.

- Step 1: List anticipated water projects.
- Step 2: Estimate the cost of each project to be funded.
- Step 3: Project the anticipated date the project is to begin.
- Step 4: Calculate the dollar amount necessary to be set aside annually.
- Step 5: Establish a line item in the budget for capital improvement expenditures.

Task 2: Develop and implement a rate setting methodology.

- Step 1: Identify water system expenses.
- Step 2: Identify replacement expenses and fund the replacement account.

*Goal Two: Establish the legal and managerial capability to protect the water system.*

Task 1: Develop a penalties section in the water ordinance.

Task 2: Adopt the amendment to the ordinance.

### ***Tools Included With FAP***

Sample resolution, sample water use and rate ordinance, service agreement checklist, DWRF informational brochure, project plan preparation guide, and securing a DWRF loan fact sheet.

---

**From:** Berndt, Jason (DEQ)  
**Sent:** Thursday, December 15, 2011 9:07 AM  
**To:** Reck, Diane (DEQ);Pettis, Constance (DEQ)  
**Cc:** Benzie, Richard (DEQ);Monosmith, Carrie (DEQ)  
**Subject:** 2011 Capacity Development Annual Report  
**Attachments:** RouhaniLetter.doc; 2011 CD Annual Report diane review.doc

Diane/Connie:

Attached is the draft report and a cover letter. There were some edits and corrections. They are located at: S:\Drinking Water and Environmental Health\Community Drinking Water\Capacity Development\Annual Report\The Reports\2011

Please be sure to use the diane review document and we should later delete the other copy of the report. This must be submitted to EPA by December 31st, so we have some time for management review and submittal.

Michigan Department of Environmental Quality  
Resource Management Division

# **ANNUAL REPORT ON CAPACITY DEVELOPMENT PROGRAM FISCAL YEAR 2011**

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December 2011

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**List of Acronyms**

ACO	Administrative Consent Orders
Act 399	Safe Drinking Water Act, 1976 PA 399, as amended
AWWA	American Water Works Association
CCR	Consumer Confidence Report
CDP	Capacity Development Program
CWS	Community Water System
DACO	District-Initiated ACO
DDBPR	Disinfectants and Disinfection Byproducts Rule
DWRF	Drinking Water Revolving Fund
eDWR	Electronic Drinking Water Reporting
ERG	Expense Reimbursement Grant
ERP	Emergency Response Plan
ETT	Enforcement Tracking Tool
FAP	Financial Action Plan
FY	Fiscal Year
GWR	Ground Water Rule
KWA	Karegnondi Water Authority
LHD	Local Health Department
MCL	Maximum Contaminant Level
MDEQ	Michigan Department Environmental Quality
MEHA	Michigan Environmental Health Association
MGMT	Michigan Groundwater Management Tool
MOR	Monthly Operation Reports
NCWS	Noncommunity Water Systems
NTNCWS	Nontransient Noncommunity Water Systems
OTCU	Operator Training and Certification Unit
PWSID	Public Water System Identification Number
RMD	Resource Management Division
SDWA	Federal Safe Drinking Water Act
SDWIS/State	Safe Drinking Water Information System/State
SNC	Significant Noncomplier
SSI	Small Systems Initiative
SWIPP	Surface Water Intake Protection Program
TMF	Technical, Managerial, and Financial
USDA-RD	United States Department of Agriculture – Rural Development
USEPA	United States Environmental Protection Agency
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program

## **1 Introduction**

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) added provisions for each state to develop a Capacity Development Program (CDP). The objective of the CDP is to enhance public health protection by helping water systems to develop and maintain the technical, managerial, and financial (TMF) capacity they need to consistently deliver a safe, reliable, and abundant supply of drinking water to all customers.

The purpose of this document is to demonstrate to the United States Environmental Protection Agency (USEPA) that the state is implementing a capacity development strategy as required in the SDWA, Section 1420(c)(1)(C), or risk losing 20 percent of the annual Drinking Water Revolving Fund (DWRf) allotment that the state is otherwise entitled to receive under the SDWA, Section 1452.

This report corresponds to the criteria set forth in the USEPA memo "Reporting Criteria for Annual State Capacity Development Program Implementation Reports" dated June 1, 2005. The report is due to the USEPA within 90 days of the end of the reporting period. Michigan's reporting period is the state fiscal year (FY) that ends on September 30, so this report is due by December 30 of each year. Elements discussed in this report are:

- New Systems.
  - Identify legal authority.
  - Identify control points.
  - List of new systems.
- Existing Systems.
  - Identify tools and activities.
  - Identify systems.
  - Identify needs and provide assistance.
  - Review implementation and address findings.
  - Modify strategy.

## **2 New Systems Program**

### *2.1 Identify Legal Authority*

The legal authority remained unchanged during the reporting period. The CDP is implemented by the Michigan Department of Environmental Quality (MDEQ), Resource Management Division (RMD), through amendments to the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), by application of capacity development policies and guidance documents and through cooperation and partnerships with other agencies.

### *2.2 Identify Control Points*

The control points remained unchanged during the reporting period. As outlined in the *New Community Water System Capacity Guideline Document*, dated May 1, 2000, new systems must demonstrate TMF capacity before serving water to the public. The new systems program relies on two control points: construction permits, which are required

by law, and final inspection, which is required by policy. Generally, a construction permit is issued based on the technical capacity of the proposed system. For Community Water Systems (CWS), the financial and managerial capacity requirements may still be pending while the system is under construction. Approval to commence operation is not granted until after an acceptable final inspection and approval of a financial plan and operations plan that address financial and managerial capacity. For nontransient noncommunity water systems (NTNCWS), the RMD has delegated the authority to the local health departments (LHDs) to review, approve, and issue construction permits. When water systems begin the permit application process, the LHD helps them outline their financial and managerial capacity. Prior to receiving approval to commence operation, the NTNCWS must submit a financial plan and a managerial plan that includes a contingency plan and designation of a certified operator.

### 2.3 List New Systems

Lists of CWS and NTNCWS that became active during the last three FYs are in Appendix A. This report normally indicates which systems appeared on a Significant Noncomplier (SNC) list during a three year period. However, the USEPA replaced the SNC list with the Enforcement Tracking Tool (ETT) in FY2010. The ETT is a better mouse trap to indicate systems' noncompliance across all rules – giving higher weight to violations posing a greater public health threat. This year, the MDEQ looked at the SNC data for FY2009 and the ETT data for FY2010 and FY2011. Next year, only the ETT will be used.

No new systems appeared on the FY2009 SNC list or on the ETT with a score of 11 or more. New system data is more meaningful when compared to all systems. The table shows the number and percent of new systems and all systems that appear on a noncompliance list (SNC or ETT). For this reporting period, new systems are performing better than all systems overall.

FY 2009 to FY 2011	CWS		NTNCWS	
	New	New & Existing	New	New & Existing
Number of systems	9	1406	42	1371
Number of systems on FY2009 SNC list or FY2010-FY2011 ETT	0	18 SNC 16 ETT	0 SNC 0 ETT	27 SNC 94 ETT
Systems on an SNC list or ETT	0%	1% SNC 1% ETT	% SNC 0% ETT	2% SNC 7% ETT

## 3 Existing Systems Program Tools and Activities Used

The *Capacity Development Strategy for Existing Public Water Systems*, dated August 1, 2000, lists the programs, tools, and/or activities to help systems acquire and maintain capacity. This section describes each of the major program elements, the target audience, and a discussion of how each helps to achieve and enhance capacity.

### 3.1 Sanitary Surveys to Evaluate Systems

Target: CWS and Noncommunity Water Systems (NCWS)

Capacity of existing systems is assessed through sanitary surveys, on-site surveillance visits, and through the construction permit process.

For NCWS, sanitary surveys are conducted every five years. Construction permits and inspections are required when new wells are installed or treatment is added. While change in classification from transient to NTNCWS, results in a capacity assessment of

the existing system, these systems are not included in the list of new systems in Appendix A.

For CWS, sanitary surveys are conducted every third year by RMD field staff. This frequency coincides with the requirements of the series of Surface Water Treatment Rules and the Ground Water Rule (GWR). Sanitary surveys result in systems being rated satisfactory, marginal, or deficient. Ratings are based on compliance with health-based standards, monitoring and reporting requirements, qualified operator requirements, and requirements in Act 399 or TMF sufficiency, such as well construction, general plans, emergency response plans, and financial requirements for privately-owned systems. The RMD staff detail their findings and recommendations in a letter to the system. These letters may include a list of milestones with dates by which the items are expected to be addressed. Options for capacity assistance may also be offered, such as recommending a financial assessment or contacting available technical assistance providers for specific assistance. These evaluation letters help systems understand the severity of the deficiencies and prioritize response activities.

The following table summarizes data on CWS sanitary surveys, visits, and construction permits in recent years. The MDEQ is pleased with the increase in visits and sanitary surveys conducted. The number of construction permit applications received continues to decline. It is expected to increase only when the state's economy gains strength.

<b>CWS Evaluations, Visits, and Construction Permits</b>			
	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>
Number of Sanitary Surveys Conducted	448	419	519
Percent Rated Satisfactory	88	80	85
Percent Rated Marginal	10	11	9
Percent Rated Deficient	5	6	6
Percent Not Rated	0	3	0
Number of Visits	1,713	1,593	1,785
Number of Construction Permits Issued	859	759	717
Percent Issued Within 10 Business Days of Receipt *	76	76	73

\* The percent completed includes water mains (which we strive to complete in 10 days) and other more complicated projects that take longer.

The frequency of surveillance visits above are as follows:

<b>Type of CWS</b>	<b>Smaller/Less Complex</b>	<b>Larger/More Complex</b>
<b>Wholesale customer supplies</b>	Once per year	Once per year
<b>CWS with no treatment*</b>	Once per year	Once per year
<b>CWS with treatment*</b>	Twice per year for systems employing treatment that is less than "complete treatment"	Four times per year for systems employing "complete treatment"

\*Treatment employed for public health protection. Excludes water softeners or other point of entry aesthetic treatment.

In addition to scheduled surveillance visits and sanitary surveys, field staff visits water systems to investigate problems discovered as a result of routine monitoring or arise as a result of emergencies. If water system issues need to be elevated to local officials, the community leadership may include field staff on the agenda of council or board meetings.

3.2 *One-on-One Technical Assistance and Consultation*

Target: CWS and NCWS

The RMD and LHD field staffs are the primary implementers of the CDP. Water system operators develop a relationship with field staff that are the primary contact for capacity development. Each CWS is served by RMD staff from 1 of the 8 district offices, and each NCWS is served by staff from 1 of the 44 LHDs under contract with the RMD. A primary objective of the RMD field staff and the LHD is to provide excellent customer service from the construction permit process for new infrastructure through the continual assessment and oversight process during operation. Field staff achieves that objective through assistance to systems during site visits, at meetings and conferences, during training events, and consultation by telephone and e-mail. Field staff attends, participates, and presents at periodic regional operator meetings to discuss upcoming regulations, regional issues, and to network with operators and managers.

The NCWS program staff of the RMD maintains communication with each of the 44 LHDs during the year. This communication occurs routinely via phone calls, e-mail, joint office and field work, and group and individual training. Also quarterly data reviews and annual evaluations of each of the 44 LHD's work are conducted to assure and maintain water system compliance. Training of LHD staff is conducted to inform, explain, and discuss new and updated program issues and procedures. During FY 2010, the NCWS Program staff was working with select LHDs to investigate means to enhance training within the evaluation process (see discussion in Section 5.1). The NCWS staff also routinely presents topics at environmental health conferences.

To increase reliability, gain efficiencies, and improve water quality, field staff serves as consultants to encourage regionalization, foster consolidation, and create partnerships among water systems. For example:

- The city of Holland has started a project to include an emergency interconnect with the city of Wyoming. The interconnect is being constructed by the city of Holland, but half the costs will be recovered through a payback agreement with the city of Wyoming. Both communities are benefiting from this partnership. Holland will receive five million gallons per day in increased capacity and Wyoming would benefit from greater flexibility in supplying water under varying conditions.
- The city of St. Louis is anticipating applying for future United States Department of Agriculture – Rural Development (USDA-RD) funding to complete a regionalization project. This project is expected to include new wells to augment the capacity of the city of Alma water treatment plant and two interconnections from the city of Alma to the city of St. Louis. Currently, the two communities are working to form a regional water authority.
- The city of Flint and Genesee County have continued to move forward in their search for an alternative source rather than relying solely on purchased water from Detroit, as mentioned in last year's edition of this report. Together with a few Lapeer County communities, they have created the Karegnondi Water Authority (KWA) to collaborate on their effort. The RMD field staff will meet with the KWA and their consultants in January 2012 to discuss the specific communities involved, funding, project timeline, and the review and issuance of construction permits.

Countless other instances of one-on-one technical assistance help water systems gain TMF capacity.

### *3.3 Other Public Water System Program Efforts*

The RMD has submitted a proposal to the USEPA, Region 5, to modify Stage 2 monitoring in combined distribution systems to achieve the public health protection intended by the rule while minimizing the monitoring costs for the water systems. When approved, the RMD intends to conduct training sessions across the state where the greatest numbers of consecutive systems are located. The purpose is to reiterate a system's obligations and to update each system's monitoring plan. During the year, the RMD central staff drafted a monitoring plan template to consolidate the Stage 1 monitoring plan and the Standard Monitoring Plan for each supply. For many consecutive systems, Stage 2 monitoring will be the first monitoring the systems have had to conduct. The upcoming training sessions will serve as a reminder for water systems to conduct this monitoring and the newly developed monitoring plan will serve as the training tool.

Other tools to help systems comply with monitoring and reporting requirements include:

- Individual monitoring schedules for each CWS and NCWS. These schedules are based on each system's applicable monitoring waivers and schedule in the standard monitoring framework. To supplement the schedule, staff may enclose or provide an Internet link to the following, depending on that year's monitoring requirements:
- Lead and Copper Report and Consumer Notice of Lead Result Certificate. This form provides a fill-in-the-blank version of the consumer notice for the convenience of systems with limited computer ability.
- Drinking Water Lead & Copper Sampling Instructions. The system may provide this document to the occupants that will be performing the sampling.
- Bacteriological Sample Siting Plan. This form incorporates GWR triggered monitoring requirements.
- List of approved laboratories.
- Annual Pumpage/Usage Report For Community Water Supply (applicable to CWS that do not submit Monthly Operation Reports [MOR] with monthly pumpage).
- Cross Connection Report. Systems use this form to demonstrate ongoing implementation of their Cross Connection Control Program.
- Consumer Confidence Report Certificate of Distribution.

Venues to communicate monitoring and reporting requirements include:

- Reminder phone calls, e-mails, or post cards.
- Reminder letters. Systems that have not yet completed their annual or less frequent monitoring receive a reminder within 30 to 90 days before the deadline to prevent a violation.

- Lead and copper reminder letters. Lead and copper monitoring is so confusing that this reminder letter also serves as monitoring guidance.
- Lead and Copper 90th percentile letter or action level exceedance letter. These letters outline the results of the system's monitoring and remind systems of further requirements, such as distributing the Consumer Notice of Lead Result, for conducting water quality monitoring or installing corrosion control treatment.
- Consumer Confidence Report (CCR) reminder letter. Each spring, RMD field staff reminds systems of the annual requirement and provides the following tools to comply. A variety of templates are made available including the Internet link to the USEPA *CCRwriter*, as well as the guidance documents *Preparing Your CCR* and *Reporting TOC on the CCR*, as applicable.
- The LHDs inform the NTNCWS of the administrative rule requirement to prepare a water quality report that contains a summary of compliance monitoring data for NTNCWS that serve K-12 schools and day care centers.
- Violation letters, discussed in Section 3.4 below, include requirements to post public notice, when applicable. Templates for typical monitoring and reporting violations, and many state drinking water violations, are available to field staff. Staff either provides the template for the system to edit and place on its own letterhead, or staff may prepare the final public notice for the system to distribute.

Tools to help systems manage the operational requirements include:

- MOR requirement. Staff reviews each MOR to assure compliance with treatment techniques and to evaluate treatment processes for optimal operating practices.
- Enhanced planning requirements: As former contingency plans become outdated, staff are helping CWS to transition to the Emergency Response Plan (ERP) using a template. (See Section 5.2.1)
- Privately-owned CWS requirements. While it is clear in the administrative rules that new systems must demonstrate technical, managerial and financial capacity before commencing operation, the 2009 amendments to Act 399 clarified that these requirements also apply to new owners of existing systems. The Stipulation to Conditions that owners must sign covers the minimum elements to ensure owners are able to provide an adequate supply of drinking water.
- Well site inspections and approvals. The LHD and RMD field staff conduct inspections and approvals of wells serving the NCWS and CWS, respectively.
- Guidance documents: The RMD staff develops and distributes guidance documents as needed:
  - *Water Well Disinfection Manual*.
  - *Suggested Practices* outlines design, construction, and operation criteria for CWS.
  - The *Cross Connection Rules Manual* outlines program requirements.
  - *New Community Water System Capacity Guideline Document* developed in 2000 guides field staff and owners of proposed or new systems through the process. It includes a capacity assessment checklist, a financial



workbook, policies related to new systems, and templates and forms for planning purposes.

- Source water protection guidance documents are available for systems pursuing these efforts.
- NCWS Program guidance documents include the *Noncommunity Staff Reference Manual*, the *WaterTrack Operators Manual* for LHD staff, and the study guide *Level 5 Drinking Water Operators Guide for those individuals pursuing certification to operate a NCWS*.
- USEPA tools. In addition to state-developed products, the field staff distributes, as needed, USEPA tools and guidance documents, promotes the Check Up Program for Small Systems and other system capacity development and sustainability tools, and promotes USEPA Webinars.

Field staff hosts and presents material at meetings, conferences, and training sessions throughout the year for water system personnel, consulting engineers, and local decision makers. Ongoing activities include serving as instructors at several operator training courses throughout the year, speaking at other meetings and conferences related to drinking water, and attending USEPA sponsored Web casts. Specific activities in FY 2011 include:

- The RMD field staff presented the *MDEQ Update* at each of eight Michigan Section, American Water Works Association (AWWA), regional meetings updating participants on new rule implementation. New rules updates and training was also presented at RMD field staff meetings usually held quarterly.
- The MDEQ cosponsors a quarterly newsletter, *Water Works News*, with the Michigan Section, AWWA. The newsletter is distributed to members and all CWS, including approximately 700 privately-owned CWS that might not otherwise receive drinking water-related information. The MDEQ share of the distribution cost is funded by the capacity development set-aside of the DWRP through a Joint Funding Agreement with the Michigan Section, AWWA.
- The NCWS Program staff occasionally participates in association conferences relevant to NCWS systems, such as the Michigan Manufactured Housing Recreational Vehicle & Campground Association, the Michigan School Business Officials, the Michigan Ground Water Association, and the annual Groundwater Conference sponsored by the Michigan Environmental Health Association.
- The RMD program staff worked with the Michigan Department of Community Health, Oral Health Program, to implement a Fluoride Grant Program to promote public water system fluoridation by offering grants to water systems wishing to purchase new or replacement fluoride feed equipment. Six water systems were awarded grants in FY 2011.
- To continue to offer quality training to RMD staff and water systems, the RMD takes advantage of EPA and AWWA Webinars. Certified operators can meet continuing education requirements with USEPA or AWWA sponsored Web casts. The RMD promotes Webinars and encourages field staff to forward information to water systems so they can participate at their site. The RMD will continue to take advantage of other opportunities to interact with water systems and their consulting engineers, municipal leaders, and others interested in drinking water issues.

A **level 5** operator is certified to operate a Class D-5 treatment system and/or a Class S-5 distribution system. Class D-5 is a NCWS with limited treatment. Class S-5 is a NTNCWS with no treatment, or a CWS with no treatment and a limited distribution system. Examples of S-5 systems include an apartment complex or condominium association.

### 3.4 Enforcement

Target: CWS and NCWS

Evaluations and compliance information become the basis for enforcement.

In an FY 2009 effort to gain consistency across districts, templates were developed for violation letters and further refined in FY 2010. When a system violates a requirement they should receive a letter that clearly states what was violated, when the violation occurred, how to return to compliance, and when to respond. It is believed that enforcement will be viewed as more predictable; therefore, systems will make a greater effort to comply to avoid enforcement.

When systems fail to return to compliance, escalated enforcement, including ACO and MDEQ orders, can be initiated. Before escalated enforcement is used, many systems return to compliance when they are assessed administrative fines for monitoring and reporting requirements. Water systems generally return to and remain in compliance with monitoring and reporting requirements after receiving a fine. During FY 2009 to 2011, 51 different CWS received a fine at least one time for at least one monitoring violation. Small systems represent all but five of the systems that received fines, which is expected as large systems typically have the resources and systems in place to ensure monitoring is timely and performed correctly.

When a fine is not applicable or does not prevent further violations, the RMD moves into an escalating series of enforcement actions that include a district initiated ACO (DACO), ACO, and in rare cases, a MDEQ order. However, field staff prefers technical assistance over enforcement to bring systems back into compliance. There were no ACO's initiated in 2011.

To streamline enforcement, the DACO may be used under certain circumstances instead of the traditional ACO. This process bypasses enforcement staff involvement; the RMD field staff drafts the DACO using templates and calculates penalties based on enforcement staff guidance. In July 2011, Lakeside Estates entered into a DACO with RMD, as they did not have the minimum number of wells with separate pumping units as required. The DACO required the owner of the system to purchase potable water from a regional system or construct a second well within six months. Lakeside Estates is currently meeting the compliance schedule and field staff expects all required actions to be completed.

Some water systems are not willing to enter into an ACO. In those cases, the RMD must escalate the enforcement level to a MDEQ order. Recently, Heritage Apartments in Oakland County has been referred to our enforcement staff for a MDEQ order. This water supply system has been rated deficient for failure to meet firm capacity requirements with a second well, has had numerous monitoring violations, was issued a Significant Deficiency Violation Notice, and has refused to enter into an ACO.

Each LHD is required to conduct enforcement necessary to address NCWS in noncompliance. The RMD field staff assists the LHD upon request, and in extreme cases, the RMD central staff may take the enforcement lead or refer it to the USEPA, Region 5, when state resources are unavailable. Typical tools used by the LHD include administrative fines, informal hearing, local license suspension procedures, and bilateral compliance agreements (similar to the DACO for CWS).

### *3.5 Operator Training and Certification*

Target: CWS and NCWS

Due to amendments to Act 399, a properly certified operator must be available at each of the 1,406 CWS and 1,371 NTNCWS and at the 66 transient NCWS that employ treatment for public health purposes. Operators maintain their certification by meeting continuing education requirements through training offered in a variety of venues.

#### *3.5.1 Operator Training and Certification Unit (OTCU)*

The RMD, OTCU, provides over 30 training courses each year and certifies nearly 80 organizations and training providers that offer other opportunities for continuing education including online courses. The OTCU has also approved a list of hands-on

training or “HOT” programs that can provide operators with at least 50 percent practical experience in a three or more hour training session.

The OTCU also administers the Expense Reimbursement Grant (ERG) Program for operators employed by systems serving fewer than 3,300 people to cover approved training registration fees up to \$300 per individual. For more information, see the *2011 Operator Certification and ERG Annual Report*, dated September 19, 2011, submitted to the USEPA.

Many of the training courses coordinated by the OTCU are taught by RMD field staff under a Joint Funding Agreement between the MDEQ and the Michigan Section, AWWA. The RMD treatment specialist schedules instructors and also instructs both the Basic and Advanced Cross Connection Control seminars and the Water Treatment and Distribution System 2.5-day Short Courses.

During on-site visits or other consultation opportunities, field staff discuss the certification status of the operator and may suggest training sessions to hone skills or prepare for the examination required to obtain or to upgrade certification.

### 3.5.2 Small CWS and NCWS Training

Under contract with the RMD, 16 LHDs provide continuing education for the level 5 operators. The intent is to provide regional training for NCWS, but any operator employed by a CWS with no treatment and a limited distribution system may attend. As stated in the *2011 Operator Certification and ERG Annual Report*, 148 operators earned continuing education credits and another 104 attended to prepare to write their level 5 exam.

Staff of the NCWS Program conducted train-the-trainer sessions for LHD staff. Topics range from current requirements and practices to discussions of new requirements and regulations. Surveillance visits and sanitary surveys are additional opportunities for the LHD staff to provide training for NCWS operators.

For the past several years, RMD staff has conducted training specifically for small CWS. General topics covered new regulatory requirements, monitoring and reporting, communicating with the public, and operational issues. Special topics change each year to keep the participants interested. The special topic in the 2011 training was “Cleaning Small Diameter Water Mains.” A total of 148 persons attended at one of four locations around the state.

## 3.6 DWRF

Target: CWS and Nonprofit NCWS

The 1996 Amendments to the SDWA authorized the creation of a revolving fund to provide low-interest loans for repairs or enhancements to help water systems comply with the SDWA. The capacity development provisions of the SDWA are funded through the DWRF allotment.

Michigan's DWRF is co-administered by the MDEQ and the Michigan Finance Authority. The MDEQ handles all programmatic issues, while the Finance Authority serves the DWRF Program with its financial expertise. Prior to the creation of the DWRF, project financing for CWS was left largely to the local unit of government or to individuals investing in their own systems.

In FY 2011, \$41 million in low-interest loans was committed for 15 projects bringing the total since the fund's inception in 1998 to \$692 million for 238 projects. Some systems receive commitments from the DWRF but may not be ready to proceed with the project until they are able to assure the revenues will be generated to repay the loan. In these cases, the system remains on the priority list for the next year. Of the projects committed, 188 have been completed for a total cost of \$471 million and the loan payments are revolving back into the fund.

"In her second executive order of 2010, Governor Jennifer Granholm has eliminated 10 state finance authorities [including the Michigan Municipal Bond Authority, that formerly coadministered the DWRF] and combined all of their functions into one agency. The new Michigan Finance Authority, established under E.O. 010-2, will help make state government more 'efficient, responsive and cost-effective,' Ms. Granholm said. The authority will be an autonomous agency within the Department of Treasury."

*Gonger News Service Michigan, Thursday, March 4, 2010*

Commitments in FY 2011 include projects to increase systems' capacity to reliably provide an adequate supply of water. Many of the projects involve replacing aging distribution infrastructure, others to provide redundancy, and still others to meet drinking water standards. Plainfield Charter Township, in Kent County, is the year's largest project of \$7.75 million. The Township will construct a 2-million-gallon reservoir at the water treatment plant, a 20-inch ductile water main crossing the Grand River, install a pressure reducing control valve, and replace water mains at various locations. The city of Holland, in Ottawa County, will construct a 36-inch emergency transmission line from the city of Wyoming's water treatment plant. This also serves as a secondary goal of a supplemental water source to provide Holland with an additional 5 million gallons per day. Other projects improvements include a new transfer pump at the treatment plant and a new generator to provide additional capacity for treatment plant control components. This project also exceeded \$7 million in water system improvements.

Michigan's drinking water program relies heavily on proper water system design and construction to prevent jeopardizing the safety of both the source and finished water. To that end, priority of DWRF projects favors those communities that are participating in a Source Water Protection Program.

### *3.7 Source Water Protection*

Systems are continuing to take steps to protect their drinking water sources.

#### *3.7.1 Groundwater Source Protection*

Target: Municipal CWS and Not-for-Profit NCWS

Minimum isolation areas around drinking water wells are established in the Michigan well construction code and in Act 399. Programs in the MDEQ, such as the Groundwater Discharge Permit Program and the On-Site Waste Water Program, reference these isolation distances as they review applications for discharge permits or site approvals to assure the facility or activity will be protective of the drinking water source. Act 399 requires the isolation area around a proposed well site be owned or controlled by the CWS or the NCWS.

To expand beyond this long-standing but minimal concept of source water protection, RMD staff are actively encouraging municipalities to conduct Wellhead Protection

Program (WHPP) activities and apply for a WHPP grant to fund the activities. Municipalities are encouraged to apply for a WHPP grant using a 50 percent local match to fund activities involved in protecting their public water supply well capture zones (based on a ten-year time-of-travel). Of the 435 municipal systems in Michigan using groundwater as a source of drinking water, 285 are involved in some aspect of wellhead protection, such as performing a delineation, inventorying the potential sources of contamination, and planning for emergencies. Of those 285 systems, 225 have completed all the steps and have an approved WHPP. As a result, 87.6 percent of the population of the state served by municipal systems using groundwater is in communities taking action to protect their groundwater sources or purchase water from communities involved in protecting their sources. The WHPP grants for FY 2011 awarded \$297,600 to 27 communities as compared to the WHPP grant cycle for FY 2010 that awarded \$642,900 to 43 communities. Lyon Township was the only new grantee for FY 2011.

The MDEQ, Drinking Water and Environmental Health Section, through a contract with Michigan State University's Department of Civil and Environmental Engineering, developed the Michigan Groundwater Management Tool (MGMT), formally known as Michigan Interactive Groundwater for Wellhead Protection. The MGMT can scientifically map wellhead protection areas for public water supply wells using information from existing statewide databases such as Wellogic, Map Image Viewer, and the Groundwater Inventory Mapping project. The Wellhead Protection Area (WHPA) is the surface and subsurface area contributing groundwater to the well. The Michigan's WHPP defines the WHPA with a 10-year time-of-travel. This provides a reasonable length of time to respond to environmental problems within the WHPA while providing an area that can be reasonably managed. The MGMT has developed surprisingly accurate predictions of spatially-detailed and representative groundwater flow patterns and WHPAs. Most of these MGMT delineations closely parallel traditionally developed WHPA's, which cost an average \$36,000.

To promote the benefit of MGMT, the MDEQ and Michigan State University recently hosted a free one-day training session for CWS, NTNCWS, LHD, and MDEQ staff. Water supply representatives in attendance were given their water system well logs, source water assessment information, and WHPA maps. Further information was provided specific to their water supply, and how groundwater quality can be protected. The RMD, Drinking Water and Environmental Health Section, is in the process of redefining "Substantial Implementation," allowing smaller systems to obtain this source water protection status, while increasing Michigan's population that is protected by these implemented activities. The next workshop will be held in Greenville in December, with more workshops planned in 2012.

### 3.7.2 Tools as a Result of Water Withdrawal Legislation

Target: CWS, NCWS, and Other Interested Parties

The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, was amended in 2006 and further amended in 2008 in response to increased water use demands, pressure to divert water outside the Great Lakes Basin, and an increase in groundwater use conflicts. The legislative amendments were intended to enhance the state's ability to manage the water resources of Michigan.

Since 2006, any proposed new or increased large quantity withdrawal, defined as a water withdrawal of 70 gallons per minute or more, requires an environmental assessment and approval prior to making use of the water resource. In 2010, the new system capacity assessment checklist was amended to address large quantity water

withdrawals and ensure authorization is obtained prior to RMD district staff issuing a permit.

### 3.7.3 Surface Water Source Protection

Target: CWS and NCWS Using Surface Water

The Surface Water Intake Protection Program (SWIPP) is the surface water counterpart to the WHPP. Under this program, communities develop partnerships with surrounding communities to identify and take action to protect the area around the intake. The seven communities that have completed an SWIPP serve small- to medium-sized populations; one of these, the city of Escanaba, was approved in FY 2011. Like an approved WHPP, an approved SWIPP will result in additional priority points being awarded to DWRF applicants, encouraging more CWS to develop one. A matching grant program, equivalent to that used in the WHPP was incorporated into the administrative rules in 2009, budget cuts have prevented the MDEQ from awarding SWIPP grants.

Monitoring can alert utility personnel of changes in water quality in time to respond quickly. To achieve this in the connecting channels between Lakes Huron and Erie, the RMD worked with federal and local governmental agencies to install a continuous, real-time water quality monitoring network in the St. Clair River, Lake St. Clair, and Detroit River. Thirteen drinking water treatment facilities equipped with a range of analytical devices have continued to operate in FY 2011. The monitoring system includes data transmission, data visualization, automated notification/alarm service, data archiving, and a publicly accessible Web site for data retrieval. In addition, rapid toxicity test equipment is being used to monitor water distribution systems in Southeast Michigan served by these surface water intakes. Nearly instantaneous communication is key to protecting surface water intakes in the Lake Huron to Lake Erie corridor because of the rapid rate of flow, periodic chemical spills, and corresponding changes in water quality. The city of Monroe in Monroe County is the last plant located on the connecting channels and received the monitoring equipment in FY 2011. Unfortunately, financial issues may jeopardize the long-term governance and funding of the Huron to Erie Alliance for Real-Time Monitoring and Information System.

### 3.8 Financial Assessments

Target: CWS's Serving Fewer Than 10,000 People That are Either Municipally Owned or Subject to Association Bylaws

To help existing CWS improve financial capacity, the RMD conducts financial assessments of systems that serve a population of less than 10,000 and that could benefit from a financial assessment. As a result, systems that are concerned about future challenges, such as complying with new rules, are making progress toward that end by improving their financial capacity. Funding for these assessments is from the technical assistance to small systems set-aside of the DWRF. Systems serving more than 10,000 people may also participate in the program, but the funding would be drawn from the capacity development set-aside.

A financial expert in the DWRF Program conducts the assessment of the community's existing financial health and develops a Financial Action Plan (FAP). The assessment is a review of financial and legal documents and an on-site meeting with system representatives.

An FAP is a tailor-made, comprehensive plan to strengthen the system's financial situation based on the assessment. Short- and long-range goals are identified in the FAP followed by a step-by-step process to reach the goals. Information on obtaining funding is provided with the FAP. The system is expected to carry out the FAP, and the RMD is available to assist when requested. An outline of a typical assessment report is included in Appendix B.

In FY 2011, one financial assessment was completed. It was recommended that the city of Burton in Genesee County implement a method of budgeting to fund their capital improvements plan and develop a rate setting methodology based on fixed/variable expenses. Another recommendation was to strengthen the water use ordinance, which will help support the rate setting structure.

### 3.9 Security

Target: CWS and NCWS

The MDEQ, Water Security and Emergency Management Program, is responsive to the various federal programs and the needs of the public water systems. Planning, training, and coordinating are all a part of the effort to emphasize emergency management for all hazards; terrorism, and malevolent acts as well as weather-related incidents and accidents.

All-day training was held for the members of the Michigan Section, AWWA, at the *7th Annual Water Security Summit: Water Security and Emergency Management*. Topics included United States Army portable water treatment units, tabletop exercises, the Michigan Water and Wastewater Agency Response Network, Risk Management Plans, and Security and Preparedness.

The USEPA has eliminated the Water Sector Security funding as of FY 2010. As a result, further contracting is curtailed. To help offset that loss of funds, grants were applied for in FY 2011, but did not receive funding. However, recently, the MDEQ received a multimedia State and Tribal Assistance Grant to continue water system security training.

Field staff will continue to be involved in safety and security enhancements through the construction permit process and the operation of new systems.

### 3.10 Electronic Reporting and Data Management

Target: CWS and NCWS

Electronic reporting and data management are tools to help the central office to identify and analyze statewide trends in contaminant levels, treatment, and distribution operations, and compliance. This ability will allow the RMD to focus assistance more effectively.

#### 3.10.1 Electronic Drinking Water Reporting (eDWR)

Target: CWS Primarily, Though Elements Designed for Laboratories That Also Serve NCWS

The RMD is working to develop electronic reporting systems to provide more convenience to water systems and more accurate and complete assessment of capacity. The successful implementation of the Internet-based reporting system for discharge monitoring reports prompted Michigan to expand the project to include



electronic Drinking Water Reporting (eDWR.) The eDWR System will provide for online submittal of drinking water laboratory results and treatment plant operational data. The collection of data will allow the RMD to query certain parameters to assess capacity on a systemwide and statewide basis. Although competing priorities have delayed the launch of this tool, progress is still being made toward implementation. Future plans include providing other required reports online.

### 3.10.2 Tracking Compliance Using Safe Drinking Water Information System/State (SDWIS/State)

Target: CWS

SDWIS/State, the federally supported database for tracking drinking water compliance activities, stores actual analytical results entered either manually or via eDWR reporting discussed above. This tool allows for more automated compliance determinations, which is particularly necessary when staff resources are stretched. In FY 2005, the CWS Program began tracking Total Coliform Rule compliance monitoring in SDWIS/State, and in FY 2010, this was expanded to include Lead and Copper Rule tracking. In addition, the CWS Program has been preparing compliance monitoring schedules for other rules for migration from the program's legacy database to SDWIS/State. The project will take at least through FY 2012 to complete.

### 3.10.3 WaterTrack

Target: NCWS

The LHD staff use the WaterTrack database to track NCWS inventories, certified operator information, sanitary survey reports, capacity development, construction permits, monitoring results, monitoring violations, violations of maximum contaminant level (MCL), and NCWS compliance reports. The information is monitored by the MDEQ staff that oversees the NCWS Program. WaterTrack uses an outdated platform, is largely unsupported, and does not contain capability to track all current rule requirements. A rewrite or transfer to SDWIS/State is necessary in the very near future.

## 4 Identify Existing Systems in Need

The strategy used to select and prioritize systems for assistance is outlined in the *Capacity Development Strategy for Existing Public Water Systems*, dated August 1, 2000, and remains unchanged. Briefly, the RMD looks at all of the following criteria:

- Compliance information.
- Sanitary surveys and results of surveillance visits.
- Construction permit bans and correspondence from the RMD addressing potential bans.
- Operation and maintenance concerns.
- Field staff input.

The sanitary surveys and surveillance visits are ongoing, and the frequency with which systems are identified for capacity assistance is continual.

## **5 Identify Capacity Development Needs and Provide Assistance**

In recent years, the economy has forced severe budget cuts. The budget woes are not limited to state government, but shared with LHD and public water supplies. Early in 2010, several state departments were reorganized including merging two into the MDNRE. A long anticipated "early out" incentive for state employees was also instituted at the end of 2010. The exodus of institutional knowledge has created a deep feeling of uncertainty with continued budget shortfalls. In early 2011, reorganization recreated the MDEQ. How to do more with less in FY 2011 and beyond is a paramount concern and factors into every decision. Working under ongoing resource challenges, the RMD still identified needs and took steps to address them in 2011.

The MDEQ continues to recognize the importance of the Drinking Water Infrastructure Needs Survey to ensure that a true picture of the infrastructure needs are presented to Congress and that Michigan maintains its fair share of the annual appropriation. This year, MDEQ field staff has helped many of the 63 water systems selected to participate in the needs survey to identify all eligible needs and provide acceptable documentation.

The RMD believes the four areas identified in the 2009 and 2010 edition of this report still needed work. In addition to those areas, the RMD concentrated on recurring total coliform positive events. Finally, RMD recognized the needs that exist at the national level and is participating in workgroups to tackle them.

### *5.1 Minimize Recurring Total Coliform Positive Events*

The NCWS Program became increasingly concerned with recurring total coliform positive events and MCL violations, in spite of an excellent compliance rate among NCWS overall. The recurring nature of these events represents a potential exposure to unsafe drinking water and a significant expense of resources. It was determined that changes are necessary to improve identification of problem systems and resolve them—in other words "find and fix" the problem once and for all. This effort requires partnering among the RMD, LHD, and well drilling contractors.

Recommendations were to improve training for well drillers and LHDs and to identify a means for more effective monitoring under certain circumstances.

Several activities are ongoing to pool the resources of the RMD, the LHDs, and the well drillers to get back to the basics of understanding coliform, practicing sanitary well construction, applying proper disinfection, developing and conducting adequate monitoring protocols, and implementing good investigative techniques.

Several activities are ongoing:

- Local Health Department (LHD) Evaluations:

Due to the success of the "Pilot" NCWS annual program evaluation process as discussed in last year's report, interactions with LHDs in the field has improved. The positive feedback has lead to mapping out other changes in the programs to promote a continual consultation review of LHDs all year long. An emphasis was placed on updating program goals, indicators and outcomes relating to the oversight of the LHDs. Stakeholder meetings will begin in FY 2012 to comment on this improved LHD evaluation strategy. The modification to our way of doing evaluations will: address noncompliance issues proactively instead of addressing them potentially several months to a year later; result in NCWS staff having a smaller geographical area to cover, allowing them to be more readily available for consultations with LHD staff; allow the

NCWS staff to provide more time in the field working directly with LHD staff conducting sanitary surveys, resolving violations, issuing construction permits, overseeing difficult treatment systems, and focusing on those facilities who are in routine noncompliance with both monitoring and MCL violations. Additionally, there will be more emphasis placed on sound well construction principles, the foundation of drinking water public health protection.

- Training of LHD staff:

The MDEQ, in conjunction with the Michigan Environmental Health Association (MEHA), provided LHD training in the field this past year by participating in a well drilling demonstration at a NCWS in Berrien County. It is the state's goal to provide more of that type of training regionally throughout the state. The MDEQ also continues to provide an annual hands-on training activity at the MEHA Annual Education Conference by providing a show and tell of various well components, both approved and unapproved. Staff of the MDEQ also continues to be invited to present at the Michigan Ground Water Association's annual conference that is attended by LHD personnel. The MDEQ's down-hole camera has been used at several Type II well investigations to investigate turbidity and chronic coliform bacteria problems. This type of in-the-field outreach will continue, along with additional training in troubleshooting chronic coliform bacteria issues.

- Building Partnerships:

Two LHD's which oversee 11 counties have volunteered to participate in the USEPA's Small Systems Initiative (SSI) For Schools and Daycares. This partnership among the MDEQ, USEPA, and LHD is to help increase or maintain compliance at these facilities. This is especially important because the population at these facilities tends to be more susceptible to the effects of environmental pollutants. This is an ongoing project. Outreach information and training was developed to help these owner/operators become more informed on their responsibilities and the potential risks to their supplies. This SSI partnership improves communication, working relationships, and understanding which in turn should reduce the duration of a total coliform positive event and exposure.

- New Manual:

The RMD has finished drafting the Abandoned Water Well Plugging Manual focusing on methods, materials, equipment, and requirements. Beginning in 1998, the MDEQ conducted abandoned well management training for well drillers and LHDs, the agency that requires plugging of existing wells when a replacement well is drilled. The training emphasized cooperation between the drillers and their LHD. As a result, a total of over 110,000 abandoned wells have been plugged, and the plugging rate approaches 90 percent at residential replacement well sites. Use of this new manual will continue to assure plugging is done properly.

In FY 2012, the RMD will continue to work more closely with the Michigan Ground Water Association, which represents well drillers, to find ways to more effectively prevent recurring total coliform positive events.

## *5.2 Follow Up on Needs Identified in 2009 and 2010*

Areas identified are continuing to be addressed.

### 5.2.1 Implement New Federal Rules

The RMD program and field staff has continued to host and participate in training on new rules. As mentioned earlier, new rule information was presented at each of the eight Michigan Section, AWWA regional meetings, at each of the four small systems CWS training, at quarterly field staff meetings, and during LHD visits by NCWS staff. Staff of the RMD is finalizing the Stage 2 DDBPR monitoring plan template to make it shorter and more concise. Additionally, two training sessions have been held to help CWS comply with Stage 2 DDBPR requirements and assist in completing their monitoring plans prior to beginning Stage 2 monitoring. Reminders of new rule changes are included in correspondence with water systems whenever possible.

As mentioned in the *2011 Operator Certification and ERG Annual Report*, RMD staff will continue training in FY 2012 targeting small system and NTNCWS certified operators. Training programs will include modules developed by the MDEQ, also being used by LHD, and they will develop new training modules to keep certified operators updated with regulatory compliance, roles, responsibilities, and latest trends and technology in operating, maintaining, and managing public water supplies.

### 5.2.2 Capture Sanitary Survey Data

Detailed sanitary survey data is captured on individual Excel spreadsheets for every groundwater and surface water CWS. To create a tool to enhance decision making, the RMD program staff is continuing to investigate options to capture that data in a query-able format.

Currently, RMD staff track basic survey data, specifically survey date, rating of the eight required elements, and significant deficiency tracking in a central database. The RMD hopes to fully transfer this basic survey tracking to SDWIS/State in the near future.

### 5.2.3 Implement Newly Revised Nonfederal Provisions of the Administrative Rules

The RMD is continuing to implement nonfederal provisions of the administrative rules that were revised along with the adoption of the new federal rules in 2009. The purposes of these revisions, which were discussed more fully in the 2010 report, are listed below:

- Improve capacity in very small systems and in licensed facilities.
- Provide oversight to NCWS that treat to improve aesthetics.
- Diversify the type of operator training received and update operator certification rules.
- Enhance planning by expanding the requirements of the general plan, reliability study, and contingency plan.
- Provide a source water protection grant program for surface water systems.
- Enhance technical capacity.

The operator training effort included the development of an operator certification program fee package to enable the OTCU to continue offering certification exams, renewals, and Advisory Board training as in the past. On September 20, 2011, Governor Snyder signed House Bills 447 and 448 into law. These bills contain the

specific details of the program fee package and the collection of fees for the services offered by the OTCU.

#### 5.2.4 Encourage Asset Management

As the infrastructure gap continues, field staff is stressing asset management concepts during interactions with CWS and their local decision makers. Good water system operation and management cannot be mandated, though the RMD hopes the enhanced planning provisions of the recently amended administrative rules will foster better water system management. Several staff attended the USEPA hosted Webinar, *Asset Management, Implementation Benefits for State Drinking Water Programs*, to better understand ways to promote asset management to their systems. In April 2011, staff and system operators also attended the Webinar, *Asset Management 101*, hosted by the USEPA.

#### 5.3 Participate in National Workgroups

Program staff in the RMD is involved in national workgroups with other states, USEPA headquarters and regional offices, the Association of State Drinking Water Administrators, and others to improve implementation or affect change to federal regulations and national policy. An NCWS Program representative has provided ongoing input to those working to revise the Total Coliform Rule. The RMD water treatment specialist is working with other states and the USEPA to develop recommendations for the anticipated long-term revisions to the Lead and Copper Rule. Also, an RMD manager will be serving as a board of the Association of State Drinking Water Administrators, participates in a National Drinking Water Infrastructure Needs Survey workgroup, and with a perchlorate workgroup consisting of EPA and state representatives assessing the need for a drinking water standard. Participating in national efforts to improve implementation of the drinking water program will assist in improving overall capacity.

### 6 Review Existing Systems Program Implementation and Address Findings

Sanitary surveys are the primary tool to evaluate capacity and identify needs for specific systems. A long-standing MDEQ policy dictates sanitary survey frequencies for all types of CWS and NCWS. Follow-up on deficiencies in any system has been a long standing practice and is required of the LHD under contract with the MDEQ. As stated in last year's edition of this report, the RMD was driven by the federal GWR and the requirement to identify and pursue resolution of significant deficiencies to draft two policies. The first policy sets frequencies for sanitary surveys and the second sets criteria to identify significant deficiencies and establishes procedures to resolve them. Both policies became effective in January 2010. There have been seven significant deficiencies identified in FY 2010 and six identified in FY 11. All CWS have met their deadlines or escalated enforcement is in place with an acceptable compliance schedule to resolve the deficiencies.

Between sanitary surveys, RMD field staff makes routine on-site visits to review the technical, managerial, and sometimes financial aspects of a CWS and to establish channels of communication with the CWS. The knowledge and familiarity gained by both parties as a result of routine visits are keys to maintaining a cooperative relationship in achieving mutual goals. The frequency of these visits has been dictated in policy based on long-standing practice.

Requests for financial assessments continued to remain sluggish this year. Rather than attempt to increase the number of financial assessments, the RMD has begun to follow

up with previously assessed water systems informally during routine on-site visits by field staff and more formally by the financial expert that conducted the original assessment. One re-assessment is currently being conducted for the Beecher Metropolitan District in Genesee County, and one assessment was completed for the city of Burton, also in Genesee County.

## **7 Modify Existing Systems Program Strategy**

The strategy remained unchanged during the reporting period. The MDEQ is continuing to implement the original strategy of moving from capacity assessment through assistance to development.

## **8 Summary**

Michigan is continuing to implement a program for new systems and a strategy for existing systems as set forth in May and August 2000, respectively. The new systems' program retains the legal authority and the control points established in 2000. A list of new systems in the last three years is included in this report. No new systems have appeared on an FY 2009 SNC or the FY 2010-FY2011 ETT.

The strategy for existing systems established in 2000 has remained the same though the specific tools and activities used to implement the strategy have been added, removed, or altered as needed. The drinking water program continually identifies systems in need of capacity development primarily through the sanitary survey process. During the reporting period, needs were identified and discussions were held to determine what areas could be enhanced. A review of implementation of various activities of the strategy occurred and changes were made. The strategy was not modified.

## Appendix A: List of New Systems

**New CWS  
FY 2009 through FY 2011**

PWSID <sup>1</sup>	CWS Name	FY Active in SDWIS/State <sup>2</sup>	Date Active CWS	SNC <sup>3</sup>	ETT <sup>4</sup>
MI0000088	ALBEE TOWNSHIP	2011	04/11/11		
MI0040416	SUNSET ESTATES GAYLORD	2011	11/01/10		
MI0000322	AUSTIN COMMONS II	2010	12/21/09		
MI0001258	CEDAR CREEK TOWNSHIP	2010	11/06/09		
MI0004778	NORTH MOORE ESTATES	2010	09/20/10		
MI0006693	TULLYMORE CLUBHOUSE AND CAMELOT VILLAGE	2010	07/01/10		
MI0061700	CURRY HOUSE	2010	08/02/10		
MI0002291	FILLMORE TOWNSHIP	2009	10/30/08		
MI0062720	GOLDEN ORCHARDS	2009	08/04/09		

<sup>1</sup> Public Water System Identification Number<sup>2</sup> Safe Drinking Water Information System/State<sup>3</sup> CWS indicated by "Yes" are on the FY2009 SNC list.<sup>4</sup> CWS indicated by "Yes" are on the FY2010 or FY2011 ETT list with a score of 11 or higher.

FY	New CWS	SNC	ETT
2011	2	0	0
2010	5	0	0
2009	2	0	0
<b>Total</b>	<b>9</b>	<b>0</b>	<b>0</b>

**New NTNCWS  
FY 2009 through FY 2011**

PWSID <sup>1</sup>	NTNCWS Name	FY Active in WaterTrack <sup>2</sup>	Date Active NTNCWS	SNC <sup>3</sup>	ETT <sup>4</sup>
MI0120220	CRYSTAL SPRINGS ESTATES	2011	12/14/10		
MI2521607	ULTRA DEX TOOLING SYSTEMS	2011	01/25/11		
MI4120960	RIVERIDGE PACKING - WORTH BUILDING	2011	10/21/10		
MI4120961	CAL PLEX	2011	04/18/11		
MI4720641	STEP BY STEP EARLY LEARNING CENTER	2011	01/07/11		
MI4720642	ALWAYS UNIQUE CHILDCARE	2011	11/29/10		
MI4720643	ASPEN TECHNOLOGIES	2011	03/09/11		
MI4720644	DYNAMIC TECHNOLOGIES LLC	2011	03/16/11		
MI4720647	COLE TAYLOR MORTGAGE - NORTH	2011	06/06/11		
MI4720648	COLE TAYLOR MORTGAGE - SOUTH BLDG	2011	06/06/11		
MI7020654	CONSUMERS ENERGY TRAILER WELL	2011	08/12/11		
MI8020565	MBG MARKETING	2011	02/03/11		
MI8120604	JELLYBEAN DAYCARE AND PRESCHOOL	2011	12/16/10		
MI0320651	PARIS RIDGE ELEMENTARY SCHOOL	2010	08/23/10		
MI0320654	MICHIGAN FINE HERBS	2010	04/05/10		
MI2521363	DIPLOMAT PHARMACY	2010	04/08/10		
MI2521460	PEYTON'S LEARNING PLACE	2010	04/21/10		
MI3320205	MUNTERS	2010	08/30/10		
MI4120954	RIVERIDGE PACKING - STORAGE	2010	12/03/09		
MI5220200	TEACHING FAMILY HOMES SCHOOL	2010	05/17/10		
MI5420424	BIG RAPIDS TOWNSHIP INDUSTRIAL PARK	2010	03/01/10		
MI7520304	MONSANTO	2010	02/23/10		
MI2120212	HYDE PROPERTIES	2009	8/12/09		
MI2521602	GOODRICH PLAZA	2009	04/24/09		
MI3020302	BIRD LAKE BIBLE SCHOOL	2009	10/21/08		
MI3320202	DART CONTAINER III	2009	09/03/09		
MI3820830	M.D.O.T. SERVICE CENTER	2009	02/10/09		
MI4120946	MEIJER #248 SOLON TWP	2009	04/10/09		
MI4520263	NORTHPORT POINT	2009	10/22/08		
MI4720097	FACE PROPERTIES LLC	2009	10/29/08		
MI4720346	OLD 23 COMMERCE CENTER	2009	02/11/09		
MI4720440	20TH CENTURY BUILDING COMPANY	2009	10/16/08		
MI4720465	20TH CENTURY BUILDING COMPANY	2009	10/17/08		
MI4720636	FOR KID'S SAKE EARLY LEARNING CENTER/ ECONO P	2009	09/24/09		
MI4720781	20TH CENTURY BUILDING COMPANY	2009	10/17/08		
MI4720899	DR. MIKA'S MEDICAL OFFICES	2009	10/23/08		
MI5620085	KIDS TIME	2009	01/07/09		
MI6322874	OAKWOOD ELEMENTARY	2009	08/19/09		
MI6520304	WBRC SCHOOLS - KIRTLAND BUILDING	2009	08/26/09		
MI6720166	NESTLE WATERS NORTH AMERICA	2009	04/03/09		
MI6720192	MUSKEGON RIVER YOUTH HOME S.O.	2009	03/03/09		



# Annual Report on Capacity Development Program – FY 2011

PWSID <sup>1</sup>	NTNCWS Name	FY Active in WaterTrack <sup>2</sup>	Date Active NTNCWS	SNC <sup>3</sup>	ETT <sup>4</sup>
MI7520302	FRESH SOLUTION FARMS, LLC	2009	10/21/08		

<sup>1</sup> Public Water System Identification Number

<sup>2</sup> WaterTrack is the database of the NCWS, from which SDWIS/Federal is populated.

<sup>3</sup> NTNCWS indicated by "Yes" are on the FY2009 SNC list.

<sup>4</sup> NTNCWS indicated by "Yes" are on the FY2010 or FY2011 ETT list with a score of 11 or higher.

FY	New NTNCWS	SNC FY2009	ETT FY2010-2011
2011	13	0	
2010	9	0	
2009	20	0	
<b>Total</b>	<b>42</b>	<b>0</b>	<b>0</b>

Correction from 2010 Report: FIVE CAP INC - NEWAYGO CENTER MI6220251 was mistakenly reported as new in FY2010. This system has existed since at least 2006 and should not have been reported as new in 2010.

## **Appendix B: Outline of a Typical Financial Assessment and Financial Action Plan**

### ***Financial Assessment***

Introduction: Population, location, transportation routes, and community characteristics; description of the water system and major projects or concerns such as expansion, securing loans, and meeting new drinking water standards; and major financial shortfall such as the need for a rate methodology.

Requested Information: Budget, last two years of audited records, water use and water rate ordinances, latest rate ordinance or resolution, recent rate or feasibility study, and contract or service agreements with outside customers.

Submitted Information: List of information provided.

Analysis: Summary or highlights of each of the documents provided by the supply.

On-Site Meeting: Date and attendees; and list of items discussed, such as the financial concerns, the billing method, and major recent projects.

### ***FAP***

*Goal One: Develop the financial capability to fund present and future needs.*

Task 1: Develop a capital improvement projects plan.

- Step 1: List anticipated water projects.
- Step 2: Estimate the cost of each project to be funded.
- Step 3: Project the anticipated date the project is to begin.
- Step 4: Calculate the dollar amount necessary to be set aside annually.
- Step 5: Establish a line item in the budget for capital improvement expenditures.

Task 2: Develop and implement a rate setting methodology.

- Step 1: Identify water system expenses.
- Step 2: Identify replacement expenses and fund the replacement account.

*Goal Two: Establish the legal and managerial capability to protect the water system.*

Task 1: Develop a penalties section in the water ordinance.

Task 2: Adopt the amendment to the ordinance.

### ***Tools Included With FAP***

Sample resolution, sample water use and rate ordinance, service agreement checklist, DWRF informational brochure, project plan preparation guide, and securing a DWRF loan fact sheet.

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**From:** Linda Hills <Linda.Hills@cadmusgroup.com>  
**Sent:** Friday, April 20, 2012 5:04 PM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Michelle Lee;Prysby, Mike (DEQ);Donaldson, Kristina (DEQ)  
**Subject:** RE: Genesee County

Most excellent -- especially for a Friday afternoon. Well done on both counts!!

Linda

Linda Hills  
Senior Associate  
The Cadmus Group, Inc  
406-457-5227

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**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Friday, April 20, 2012 2:54 PM  
**To:** Linda Hills  
**Cc:** Michelle Lee; Prysby, Mike (DEQ); Donaldson, Kristina (DEQ)  
**Subject:** RE: Genesee County

Linda,

Yes, we should be able to do so. I attended a meeting about a month ago with our division management and representatives from the County and the Emergency Manager appointed for the City of Flint. During this meeting, the County indicated they have made the final decision to proceed and wanted to know who would be receiving the plans for construction permits since various facilities will be in different MDEQ districts.

The city also indicated their desire to participate which mostly means they contribute financially and connect to the raw water transmission main when it gets to the city so they can start using their standby treatment plant on a full time basis. However, the city also told us their mayor had agreed (due to politics) to give Detroit one last chance to offer a better deal for Flint to remain a customer. Hence, they couldn't formally commit to the new authority at that time, but I think they may have since done so.

Mike Prysby in our Lansing District Office should be able to provide the latest details and any documentation needed. I'm not sure, but I believe Genesee and Flint are assigned the lion's share of this project because the needs of systems in Lapeer and Sanilac Counties are almost insignificant when compared to the demands of the 2 largest customers that are located the furthest from Lake Huron.

Mike, please review Linda's request below and pull together the latest documentation you have received that further demonstrates the commitment of Genesee County to proceed with the Karengoodi Water Authority proposal. If you have any updates that provide Flint's commitment and any information about the relative cost assignment among the authority customers, please gather that information as well. If you bring or send it to me, I will forward it to Cadmus.

Linda, earlier today I received Kris Donaldson's response for Detroit based on our discussion on Tuesday. I have been in a Certification Advisory Board meeting all day and haven't read through it yet. I hope to send it along on Monday. Enjoy your weekend.

Richard

---

**From:** Linda Hills [<mailto:Linda.Hills@cadmusgroup.com>]  
**Sent:** Friday, April 20, 2012 3:24 PM

**To:** Benzie, Richard (DEQ)  
**Cc:** Michelle Lee  
**Subject:** Genesee County

Richard – Project 1010 on this survey is for a new source and WTP upgrades for Genesee County, Sanilac County, Lapeer County and the City of Flint.

Can you provide more updated information since the September 2009 PER? Are they still pursuing this project? Can you provide anything showing a level of “commitment?”

If we can allow this project, we think it would be most appropriate to unlump it into Genesee County and Flint’s respective shares.

Thanks

Linda

Linda Hills  
Senior Associate  
The Cadmus Group, Inc  
406-457-5227

---

**From:** Linda Hills <Linda.Hills@cadmusgroup.com>  
**Sent:** Friday, May 11, 2012 4:03 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: DWINSA Status Report 5/11/2012  
**Attachments:** MI DWINSA data as of 5-11-12.xlsx

Richard --- here's michigan's data

Have a good weekend!

Linda

---

**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Friday, May 11, 2012 1:14 PM  
**To:** Linda Hills  
**Subject:** RE: DWINSA Status Report 5/11/2012

Linda,

Should we be sending modifications to someone other than Dru next week? I expect one final push from some of our district staff.

Richard

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**From:** Linda Hills [<mailto:Linda.Hills@cadmusgroup.com>]  
**Sent:** Friday, May 11, 2012 3:04 PM  
**To:** [Barles.Robert@epamail.epa.gov](mailto:Barles.Robert@epamail.epa.gov); [harvey.david@epamail.epa.gov](mailto:harvey.david@epamail.epa.gov)  
**Cc:** Donna Jensen; Sandie Koenig; Michelle Lee; Druanne Cote; Amanda Ereth  
**Subject:** DWINSA Status Report 5/11/2012

Greetings DWINSA Workgroup – with only one more week left to submit mods for state systems, we thought you might like to have a more detailed status report. Attached is the standard report, and below is some more specific information about the survey status on a national level.

We are working very hard to get as many of the December vintage surveys uploaded as possible this week. As you can see, we've currently uploaded 98% of state systems, so we're very close.

A few of you have asked for a full "data dump" of the projects you've submitted to date. To those who have requested it, I'll get them out today and they will be current as of this morning.

Please be aware the our Mods Coordinator, Dru Prescott will be out next week, so if you have any questions on modifications submitted or the mods process, you can contact Amanda Ereth, Sandie Koenig, Michelle Lee or myself.

Thank you all, and have a great weekend.

Linda Hills

Linda Hills  
Senior Associate  
The Cadmus Group, Inc

**State data as of 5/11/2012**

System Level Data				Project Level Data					
Systems Sampled	Surveys Received	Surveys Uploaded	% of Received Uploaded	Projects Processed	Projects Accepted with Cost	Projects Accepted with Amended Cost	Projects Accepted But No Cost	Projects Deleted	Projects Deleted But Included Elsewhere
2859	2778	2713	98%	90257	65735	10316	521	8750	4935

**AI/ANV data as of 5/11/2012**

System Level Data				Project Level Data					
Systems Sampled	Surveys Received	Surveys Uploaded	% of Received Uploaded	Projects Processed	Projects Accepted with Cost	Projects Accepted with Amended Cost	Projects Accepted But No Cost	Projects Deleted	Projects Deleted But Included Elsewhere
306	302	263	87%	3374	2240	673	26	284	151

A		B		C	D
				System Pipe Length	Project Number
1	PWSID	System Name			
2					
3	MI0000110	ALGONAC		119890	1000
4	MI0000110	ALGONAC		119890	1002
5	MI0000110	ALGONAC		119890	1005
6	MI0000110	ALGONAC		119890	2000
7	MI0000110	ALGONAC		119890	2001
8	MI0000110	ALGONAC		119890	3001
9	MI0000220	ANN ARBOR		2478960	1001
10	MI0000220	ANN ARBOR		2478960	1002
11	MI0000220	ANN ARBOR		2478960	1003
12	MI0000220	ANN ARBOR		2478960	1004
13	MI0000220	ANN ARBOR		2478960	1005
14	MI0000220	ANN ARBOR		2478960	1006
15	MI0000220	ANN ARBOR		2478960	1007
16	MI0000220	ANN ARBOR		2478960	1008
17	MI0000220	ANN ARBOR		2478960	1009
18	MI0000220	ANN ARBOR		2478960	1011
19	MI0000220	ANN ARBOR		2478960	1012
20	MI0000220	ANN ARBOR		2478960	1013
21	MI0000220	ANN ARBOR		2478960	1014
22	MI0000220	ANN ARBOR		2478960	1015
23	MI0000220	ANN ARBOR		2478960	1019
24	MI0000220	ANN ARBOR		2478960	1020
25	MI0000220	ANN ARBOR		2478960	1021
26	MI0000220	ANN ARBOR		2478960	1022
27	MI0000220	ANN ARBOR		2478960	1023
28	MI0000220	ANN ARBOR		2478960	1024
29	MI0000220	ANN ARBOR		2478960	1025
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31	MI0000220	ANN ARBOR		2478960	1027
32	MI0000220	ANN ARBOR		2478960	1028
33	MI0000220	ANN ARBOR		2478960	1029
34	MI0000220	ANN ARBOR		2478960	1030
35	MI0000220	ANN ARBOR		2478960	2001
36	MI0000220	ANN ARBOR		2478960	2002
37	MI0000220	ANN ARBOR		2478960	2003
38	MI0000220	ANN ARBOR		2478960	2004
39	MI0000220	ANN ARBOR		2478960	2005





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1			Type Code	Current/ Future	Regulation/ Secondary Purpose					Capacity	Diameter	Length	Number Needed	Cost	Cost Date	Document ation Code		
2	Reason 4	Reason 5			Reg 1	Reg 2	Reg 3	Reg 4	Reg 5							Doc 1	Doc 2	Doc 3
3		H	F	F	4A					2.75			1		1/1/1900 0:00	10	6	
4		H	F	F	4A					0.5			1		1/1/1900 0:00	10		
5		R	F	F	4A					300			1		1/1/1900 0:00	10		
6		R	C	C	4A						8	10790			1/1/1900 0:00	11		
7		R	C	C	4A						8	1199			1/1/1900 0:00	10		
8		R	F	F	4A						0.625		1700		1/1/1900 0:00	10		
9		R	F	F									1	250000	2/1/2010 0:00	1		
10		R	C	C	2B	2E							1	7200000	10/1/2011 0:00	1		
11		R	C	C									1	400000	2/1/2010 0:00	1		
12		R	C	C						10			3	1400000	12/1/2010 0:00	1		
13		N	F	F									1	300000	12/1/2010 0:00	1		
14																		
15																		
16		H	F	F										1750000	2/1/2010 0:00	1		
17		N	F	F									1	3000000	12/1/2010 0:00	1		
18		H	C	C									1	500000	12/1/2010 0:00	1		
19		H	C	C						0.5			1	700000	12/1/2012 0:00	1		
20																		
21																		
22																		
23		H	C	C										2100000	12/1/2010 0:00	1		
24		H	F	F	1A									725000	12/1/2010 0:00	1		
25		H	C	C							30		2	250000	12/1/2010 0:00	1		
26																		
27																		
28		H	F	F						4.37			1		1/1/1900 0:00	10		
29		H	F	F						11.28			1		1/1/1900 0:00	10		
30		H	F	F						18.4			1		1/1/1900 0:00	10		
31		N	C	C	1G	2B							1		1/1/1900 0:00	10		
32		N	C	C	2B								1		1/1/1900 0:00	10		
33																		
34																		
35																		
36		R	F	F	1B						6	450		175000	12/1/2010 0:00	1		
37		R	F	F	1B						8	1500		490000	12/1/2010 0:00	1		
38																		
39		N	C	C							16	800		275000	12/1/2010 0:00	1		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1			Commen t Codes							
2	Doc 4	Doc 5	Commen t 1	Commen t 2	Commen t 3	Commen t 4	Commen t 5	Commen t 6	Commen t 7	Commen t 8
3			340							
4			100							
5			100							
6			324							
7			324							
8			340							
9			100							
10			326							
11			100							
12			100							
13			100							
14			216							
15			216							
16			100							
17			100							
18			100							
19			100							
20			216							
21			204							
22			204							
23			328	326						
24			100							
25			326							
26			204							
27			162							
28			100							
29			100							
30			100							
31			328							
32			328							
33			162							
34			162							
35			216							
36			100							
37			100							
38			224							
39			338							

	A	B	C	D
40	MI0000220	ANN ARBOR	2478960	2006
41	MI0000220	ANN ARBOR	2478960	2007
42	MI0000220	ANN ARBOR	2478960	2008
43	MI0000220	ANN ARBOR	2478960	2009
44	MI0000220	ANN ARBOR	2478960	2010
45	MI0000220	ANN ARBOR	2478960	2011
46	MI0000220	ANN ARBOR	2478960	2012
47	MI0000220	ANN ARBOR	2478960	2013
48	MI0000220	ANN ARBOR	2478960	2014
49	MI0000220	ANN ARBOR	2478960	2015
50	MI0000220	ANN ARBOR	2478960	2016
51	MI0000220	ANN ARBOR	2478960	2017
52	MI0000220	ANN ARBOR	2478960	2018
53	MI0000220	ANN ARBOR	2478960	2019
54	MI0000220	ANN ARBOR	2478960	2020
55	MI0000220	ANN ARBOR	2478960	2021
56	MI0000220	ANN ARBOR	2478960	2022
57	MI0000220	ANN ARBOR	2478960	2023
58	MI0000220	ANN ARBOR	2478960	2024
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60	MI0000220	ANN ARBOR	2478960	2026
61	MI0000220	ANN ARBOR	2478960	2027
62	MI0000220	ANN ARBOR	2478960	2028
63	MI0000220	ANN ARBOR	2478960	2029
64	MI0000220	ANN ARBOR	2478960	2030
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67	MI0000220	ANN ARBOR	2478960	2033
68	MI0000220	ANN ARBOR	2478960	2034
69	MI0000220	ANN ARBOR	2478960	2035
70	MI0000220	ANN ARBOR	2478960	2036
71	MI0000220	ANN ARBOR	2478960	2037
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73	MI0000220	ANN ARBOR	2478960	2039
74	MI0000220	ANN ARBOR	2478960	2040
75	MI0000220	ANN ARBOR	2478960	2041
76	MI0000220	ANN ARBOR	2478960	3001
77	MI0000220	ANN ARBOR	2478960	3002
78	MI0000220	ANN ARBOR	2478960	3003
79	MI0000220	ANN ARBOR	2478960	3004
80	MI0000220	ANN ARBOR	2478960	3005
81	MI0000220	ANN ARBOR	2478960	3006



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
40			N	F							8	2400		625000	2/1/2010 0:00	1		
41			R	C	1B						8	750		235000	12/1/2010 0:00	1		
42																		
43																		
44			N	F	2A	1B					8	700		160000	12/1/2010 0:00	1		
45			R	C	1B						12	1000		225000	12/1/2010 0:00	1		
46																		
47																		
48																		
49			R	C							4	350		170000	12/1/2010 0:00	1		
50			R	C							4	360		300000	2/1/2010 0:00	1		
51																		
52																		
53			R	C							12	4250		600000	2/1/2010 0:00	1		
54																		
55			R	C							8	4700		1500000	12/1/2010 0:00	1		
56			R	F	1B						8	900		210000	12/1/2006 0:00	20		
57			R	C							30			1530000	2/1/2010 0:00	1		
58																		
59			R	F							8	1200		400000	12/1/2010 0:00	1		
60																		
61			R	F							12	5350		2100000	12/1/2010 0:00	1		
62			R	F							6	500		155000	12/1/2012 0:00	1		
63			R	F							20			225000	12/1/2012 0:00	1		
64			R	F							20	14100		6400000	12/1/2010 0:00	1		
65			R	C										3500000	12/1/2010 0:00	1		
66			N	C							16	550		500000	12/1/2010 0:00	1		
67			R	C							8	650		100000	12/1/2010 0:00	1		
68			R	C										97000	12/1/2010 0:00	1		
69																		
70			N	F							16			60000	5/1/2010 0:00	1		
71			R	C							30			957000	12/1/2010 0:00	1		
72																		
73			R	C							6	33			1/1/1900 0:00	10		
74			R	C							8	744			1/1/1900 0:00	10		
75			R	C							12	4335			1/1/1900 0:00	10		
76			N	F							12			400000	12/1/2010 0:00	1		
77			N	F							16			1	12/1/2010 0:00	1		
78			R	F							20			1	12/1/2010 0:00	1		
79			N	F							16			1	12/1/2006 0:00	1		
80			N	C	1B									3	470000	5/1/2010 0:00	1	
81			R	F							0.625		22501		1/1/1900 0:00	11		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
40			100							
41			100							
42			216							
43			118							
44			338	328						
45			100							
46			118							
47			216							
48			118							
49			100							
50			100							
51			118							
52			170							
53			328							
54			118							
55			100							
56			100							
57			100							
58			118							
59			100							
60			118							
61			100							
62			100							
63			100							
64			100							
65			100							
66			100							
67			100							
68			100							
69			200							
70			100							
71			100							
72			142							
73			278							
74			280							
75			280							
76			100							
77			100							
78			100							
79			100							
80			100							
81			308							

	A	B	C	D
82	MI0000220	ANN ARBOR	2478960	3007
83	MI0000220	ANN ARBOR	2478960	3008
84	MI0000220	ANN ARBOR	2478960	3009
85	MI0000220	ANN ARBOR	2478960	3010
86	MI0000220	ANN ARBOR	2478960	3011
87	MI0000220	ANN ARBOR	2478960	3012
88	MI0000220	ANN ARBOR	2478960	3013
89	MI0000220	ANN ARBOR	2478960	3014
90	MI0000220	ANN ARBOR	2478960	3015
91	MI0000220	ANN ARBOR	2478960	3016
92	MI0000220	ANN ARBOR	2478960	3017
93	MI0000220	ANN ARBOR	2478960	3018
94	MI0000220	ANN ARBOR	2478960	3019
95	MI0000220	ANN ARBOR	2478960	3020
96	MI0000220	ANN ARBOR	2478960	3021
97	MI0000220	ANN ARBOR	2478960	3022
98	MI0000220	ANN ARBOR	2478960	3023
99	MI0000220	ANN ARBOR	2478960	3024
100	MI0000340	BAD AXE	252209	1000
101	MI0000340	BAD AXE	252209	1001
102	MI0000340	BAD AXE	252209	1002
103	MI0000340	BAD AXE	252209	1003
104	MI0000340	BAD AXE	252209	1004
105	MI0000340	BAD AXE	252209	1005
106	MI0000340	BAD AXE	252209	1006
107	MI0000340	BAD AXE	252209	1007
108	MI0000340	BAD AXE	252209	1008
109	MI0000340	BAD AXE	252209	2000
110	MI0000340	BAD AXE	252209	2001
111	MI0000340	BAD AXE	252209	2003
112	MI0000340	BAD AXE	252209	3000
113	MI0000340	BAD AXE	252209	3001
114	MI0000340	BAD AXE	252209	3002
115	MI0000340	BAD AXE	252209	3003
116	MI0000340	BAD AXE	252209	3004
117	MI0000340	BAD AXE	252209	3005
118	MI0000340	BAD AXE	252209	3006
119	MI0000340	BAD AXE	252209	3007
120	MI0000720	BIRCH RUN, VILLAGE OF	61275	1000
121	MI0000720	BIRCH RUN, VILLAGE OF	61275	1001
122	MI0000720	BIRCH RUN, VILLAGE OF	61275	2000
123	MI0000720	BIRCH RUN, VILLAGE OF	61275	2001





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
82			R	F							0.75		1669		1/1/1900 0:00	11		
83			R	F							1		1888		1/1/1900 0:00	11		
84			R	F							2		955		1/1/1900 0:00	11		
85			R	F							2		725		1/1/1900 0:00	11		
86			R	F							3		140		1/1/1900 0:00	11		
87			R	F							4		74		1/1/1900 0:00	11		
88			R	F							6		30		1/1/1900 0:00	11		
89			R	F							8		5		1/1/1900 0:00	11		
90			R	F							10		3		1/1/1900 0:00	11		
91			R	F							12		1		1/1/1900 0:00	11		
92																		
93																		
94		R	C	C										2000000	12/1/2010 0:00	11		
95		R	F	C						1500			1		1/1/1900 0:00	11		
96		R	F	C						250			1		1/1/1900 0:00	11		
97		R	F	C						250			1		1/1/1900 0:00	11		
98		R	F	C						250			1		1/1/1900 0:00	11		
99		R	C	C									1		1/1/1900 0:00	11		
100		H	C	C	4A					0.86			1		1/1/1900 0:00	2	10	
101		H	C	C	4A					0.72			1		1/1/1900 0:00	10	2	
102		H	F	C	4A					0.3			1	74800	9/1/2006 0:00	4		
103		H	F	C	4A					0.5			1	95000	8/1/2006 0:00	4		
104		H	F	C	4A					4.32			3		1/1/1900 0:00	11		
105		H	C	C	4A								1		1/1/1900 0:00	10		
106		H	C	C	4A								1		1/1/1900 0:00	10		
107		R	F	C	4A								1		1/1/1900 0:00	10		
108		R	F	C	4A					175			3		1/1/1900 0:00	10		
109		R	C	C	4A						8	11000			1/1/1900 0:00	10	11	
110		R	C	C	4A						8	11800			1/1/1900 0:00	10	11	
111		R	C	C	4A						12	2410			1/1/1900 0:00	10	11	
112		R	F	C	2D						0.75		1259		1/1/1900 0:00	6	10	
113		R	C	C	2D								37		1/1/1900 0:00	11	10	
114		R	C	C	4A								30		1/1/1900 0:00	11	10	
115		R	F	C	2D						1		63		1/1/1900 0:00	10	6	
116		R	F	C	2D						1.5		25		1/1/1900 0:00	6	10	
117		R	F	C	2D						2		46		1/1/1900 0:00	10	6	
118		R	F	C	2D						3		7		1/1/1900 0:00	10	6	
119		R	F	C	2D						4		5		1/1/1900 0:00	10	6	
120		H	F	C	4A					0.075			1		1/1/1900 0:00	11		
121		H	F	C	4A					0.1			1		1/1/1900 0:00	11		
122		R	F	C	4A						6	3675			1/1/1900 0:00	11		
123		R	F	C	4A						8	2450			1/1/1900 0:00	11		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
82			308							
83			308							
84			308							
85			308							
86			308							
87			308							
88			308							
89			308							
90			308							
91			308							
92			162	200						
93			162	200						
94			328							
95			100							
96			100							
97			100							
98			100							
99			100							
100			340	324						
101			100	324						
102			100							
103			100							
104			100							
105			100							
106			100							
107			100							
108			100							
109			326							
110			326							
111			326							
112			100							
113			298							
114			298							
115			100							
116			100							
117			100							
118			100							
119			100							
120			244							
121			100							
122			344							
123			100							

	A	B	C	D
124	MI0000720	BIRCH RUN, VILLAGE OF	61275	3001
125	MI0000720	BIRCH RUN, VILLAGE OF	61275	3002
126	MI0000720	BIRCH RUN, VILLAGE OF	61275	3003
127	MI0000720	BIRCH RUN, VILLAGE OF	61275	3004
128	MI0000720	BIRCH RUN, VILLAGE OF	61275	3005
129	MI0000720	BIRCH RUN, VILLAGE OF	61275	3006
130	MI0000720	BIRCH RUN, VILLAGE OF	61275	3007
131	MI0000940	BROWNSTOWN TWP	857212	2000
132	MI0000940	BROWNSTOWN TWP	857212	2001
133	MI0000940	BROWNSTOWN TWP	857212	2002
134	MI0000940	BROWNSTOWN TWP	857212	2003
135	MI0000940	BROWNSTOWN TWP	857212	2004
136	MI0000940	BROWNSTOWN TWP	857212	2005
137	MI0000940	BROWNSTOWN TWP	857212	2006
138	MI0000940	BROWNSTOWN TWP	857212	2007
139	MI0000940	BROWNSTOWN TWP	857212	2008
140	MI0000940	BROWNSTOWN TWP	857212	2009
141	MI0000940	BROWNSTOWN TWP	857212	2010
142	MI0000940	BROWNSTOWN TWP	857212	2011
143	MI0000940	BROWNSTOWN TWP	857212	2012
144	MI0000940	BROWNSTOWN TWP	857212	2013
145	MI0000940	BROWNSTOWN TWP	857212	2014
146	MI0000940	BROWNSTOWN TWP	857212	2015
147	MI0000940	BROWNSTOWN TWP	857212	2016
148	MI0000940	BROWNSTOWN TWP	857212	2017
149	MI0000940	BROWNSTOWN TWP	857212	3000
150	MI0000940	BROWNSTOWN TWP	857212	3001
151	MI0000980	BUENA VISTA TOWNSHIP	480638	2000
152	MI0000980	BUENA VISTA TOWNSHIP	480638	2001
153	MI0000980	BUENA VISTA TOWNSHIP	480638	2002
154	MI0000980	BUENA VISTA TOWNSHIP	480638	2003
155	MI0000980	BUENA VISTA TOWNSHIP	480638	2004
156	MI0000980	BUENA VISTA TOWNSHIP	480638	2006
157	MI0000980	BUENA VISTA TOWNSHIP	480638	2007
158	MI0000980	BUENA VISTA TOWNSHIP	480638	2008
159	MI0000980	BUENA VISTA TOWNSHIP	480638	2009
160	MI0000980	BUENA VISTA TOWNSHIP	480638	2010
161	MI0000980	BUENA VISTA TOWNSHIP	480638	2011
162	MI0000980	BUENA VISTA TOWNSHIP	480638	2012
163	MI0000980	BUENA VISTA TOWNSHIP	480638	2013
164	MI0000980	BUENA VISTA TOWNSHIP	480638	2025
165	MI0000980	BUENA VISTA TOWNSHIP	480638	2026



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
124			R	F							1				1/1/1900 0:00	11		
125			R	C	4A						0.625		551		1/1/1900 0:00	10		
126			R	F	4A						1		89		1/1/1900 0:00	10		
127			R	F	4A						1.5		54		1/1/1900 0:00	10		
128			R	F	4A						2		24		1/1/1900 0:00	10		
129			R	F	4A						3		5		1/1/1900 0:00	10		
130			R	F	4A						4		1		1/1/1900 0:00	10		
131			R	C	4A						12	7800			1/1/1900 0:00	1	10	
132			R	C	4A						16	10000			1/1/1900 0:00	10	1	
133			R	C	4A						12	1600			1/1/1900 0:00	10	1	
134			N	C	4A						12	4000			1/1/1900 0:00	10	1	
135			N	C	4A						16	5200			1/1/1900 0:00	1	10	
136			N	C	4A						16	3700			1/1/1900 0:00	10	1	
137			R	C	4A						8	5000			1/1/1900 0:00	10	1	
138			R	C	4A						8	7500			1/1/1900 0:00	10	1	
139			R	C	4A						8	5500			1/1/1900 0:00	1	10	
140			R	C	4A						8	3000			1/1/1900 0:00	1	10	
141			R	C	4A						8	2500			1/1/1900 0:00	1	10	
142			R	C	4A						8	9000			1/1/1900 0:00	1	10	
143			R	C	4A						8	10000			1/1/1900 0:00	10	1	
144			R	C	4A						8	5000			1/1/1900 0:00	10	1	
145			R	C	4A						8	3000			1/1/1900 0:00	1	10	
146			R	C	4A						8	1142			1/1/1900 0:00	1	10	
147			R	C	4A						12	1515			1/1/1900 0:00	1	10	
148			R	C	4A						8	15000			1/1/1900 0:00	10	1	
149			R	F							0.75		9210		1/1/1900 0:00	6	10	
150			R	C	1D								92		1/1/1900 0:00	6	10	
151			N	C	2A						8	650			1/1/1900 0:00	2	10	
152			N	C	2B						12	1742			1/1/1900 0:00	10	2	
153			N	C	2A						8	5280			1/1/1900 0:00	10	2	
154			N	C	2B						8	1320			1/1/1900 0:00	2	10	
155			N	C	2A						8	1320			1/1/1900 0:00	2	10	
156			N	C	2A						8	200			1/1/1900 0:00	10	2	
157			N	C	2B						8	600			1/1/1900 0:00	2	10	
158			N	C	2B						8	2640			1/1/1900 0:00	10	2	
159			N	C	2A						8	2640			1/1/1900 0:00	2	10	
160			N	C	2B						12	2640			1/1/1900 0:00	10	6	2
161			N	C	2B						12	8765			1/1/1900 0:00	2	6	10
162			N	C	2B						12	5016			1/1/1900 0:00	2	10	6
163			N	C	2B						12	2640			1/1/1900 0:00	10	6	2
164			N	C	2B						8	1742			1/1/1900 0:00	2	10	
165			R	F	4A						8	48060			1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
124			100							
125			330	340						
126			100							
127			100							
128			100							
129			100							
130			100							
131			100							
132			100							
133			100							
134			100							
135			100							
136			100							
137			100							
138			100							
139			100							
140			100							
141			100							
142			100							
143			100							
144			100							
145			100							
146			100							
147			100							
148			100							
149			328	344						
150			100							
151			100							
152			100							
153			100							
154			100							
155			100							
156			100							
157			100							
158			100							
159			340							
160			100							
161			100							
162			100							
163			100							
164			100							
165			100							

	A	B	C	D
166	MI0000980	BUENA VISTA TOWNSHIP	480638	3004
167	MI0000980	BUENA VISTA TOWNSHIP	480638	3005
168	MI0000980	BUENA VISTA TOWNSHIP	480638	3006
169	MI0000980	BUENA VISTA TOWNSHIP	480638	3007
170	MI0000980	BUENA VISTA TOWNSHIP	480638	3008
171	MI0000980	BUENA VISTA TOWNSHIP	480638	3009
172	MI0000980	BUENA VISTA TOWNSHIP	480638	3010
173	MI0000980	BUENA VISTA TOWNSHIP	480638	3011
174	MI0000980	BUENA VISTA TOWNSHIP	480638	3012
175	MI0000980	BUENA VISTA TOWNSHIP	480638	3013
176	MI0000980	BUENA VISTA TOWNSHIP	480638	3014
177	MI0000980	BUENA VISTA TOWNSHIP	480638	3015
178	MI0000980	BUENA VISTA TOWNSHIP	480638	3016
179	MI0001480	CLINTON TOWNSHIP	1747680	1000
180	MI0001480	CLINTON TOWNSHIP	1747680	1001
181	MI0001480	CLINTON TOWNSHIP	1747680	2000
182	MI0001480	CLINTON TOWNSHIP	1747680	2001
183	MI0001480	CLINTON TOWNSHIP	1747680	2002
184	MI0001480	CLINTON TOWNSHIP	1747680	2003
185	MI0001480	CLINTON TOWNSHIP	1747680	2004
186	MI0001480	CLINTON TOWNSHIP	1747680	2005
187	MI0001480	CLINTON TOWNSHIP	1747680	2006
188	MI0001480	CLINTON TOWNSHIP	1747680	2007
189	MI0001480	CLINTON TOWNSHIP	1747680	3000
190	MI0001480	CLINTON TOWNSHIP	1747680	3001
191	MI0001480	CLINTON TOWNSHIP	1747680	3002
192	MI0001730	DEARBORN	0	1000
193	MI0001730	DEARBORN	0	2000
194	MI0001730	DEARBORN	0	2001
195	MI0001730	DEARBORN	0	2002
196	MI0001730	DEARBORN	0	2003
197	MI0001730	DEARBORN	0	2004
198	MI0001730	DEARBORN	0	2005
199	MI0001730	DEARBORN	0	2006
200	MI0001730	DEARBORN	0	3000
201	MI0001730	DEARBORN	0	3001
202	MI0001730	DEARBORN	0	3002
203	MI0001730	DEARBORN	0	3003
204	MI0001730	DEARBORN	0	3004
205	MI0001730	DEARBORN	0	3005
206	MI0001730	DEARBORN	0	3006
207	MI0001730	DEARBORN	0	3007





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
166			R	F	4A						0.75		3105		1/1/1900 0:00	10	11	
167			R	F	4A						1		83		1/1/1900 0:00	11	10	
168			R	F	4A						1.5		52		1/1/1900 0:00	11	10	
169			R	F	4A						2		75		1/1/1900 0:00	11	10	
170			R	F	4A						3		14		1/1/1900 0:00	11	10	
171			R	F	4A						4		2		1/1/1900 0:00	10	11	
172			R	F	4A						5		3		1/1/1900 0:00	10	11	
173			R	F	4A						6		1		1/1/1900 0:00	11	10	
174			R	F	4A						10		3		1/1/1900 0:00	10	11	
175			R	F	4A						0.75		1		1/1/1900 0:00	11		
176			R	F	4A						2		2		1/1/1900 0:00	11		
177			R	F	4A						3		2		1/1/1900 0:00	11		
178			R	F	4A						4		1		1/1/1900 0:00	11		
179			H	F	4A					28.8			1		1/1/1900 0:00	10		
180			H	F	4A					3.5			1		1/1/1900 0:00	10		
181			R	C	4A						8	20000		900000	10/1/2010 0:00	10	1	
182			R	C	4A						12	5000		480000	12/1/2010 0:00	1	10	
183			R	C	4A						8	5000		1200000	10/1/2010 0:00	10	1	
184			R	C	4A						8	9000		1080000	10/1/2010 0:00	10	1	
185			R	C	4A						8	51000		6120000	10/1/2010 0:00	1	10	
186			R	C	4A						8	15700		1884000	10/1/2010 0:00	1	10	
187			R	C	4A						16	3100		465000	10/1/2010 0:00	10	1	
188			R	F	4A						8	66000			1/1/1900 0:00	10		
189			R	C	4A						1		29288		1/1/1900 0:00	10		
190			R	C	4A						8		210		1/1/1900 0:00	10	6	
191																		
192			N	F	4A					5					1/1/1900 0:00	20		
193			R	C	4A						6	316192	1		1/1/1900 0:00	20		
194			R	C	4A						8	83857	1		1/1/1900 0:00	20		
195			R	C	4A						10	5606	1		1/1/1900 0:00	20		
196			R	C	4A						12	33952	1		1/1/1900 0:00	20		
197			R	C	4A						16	3155	1		1/1/1900 0:00	20		
198			R	C	4A						24	376	1		1/1/1900 0:00	20		
199			R	C	4A						30	10	1		1/1/1900 0:00	20		
200			R	C	1D						1		34580		1/1/1900 0:00	10	11	
201			R	F	4A						0.625		23126		1/1/1900 0:00	10	11	
202			R	F							0.625		26499		1/1/1900 0:00	11	10	
203			R	F							0.75		2798		1/1/1900 0:00	10	11	
204			R	F							1		1927		1/1/1900 0:00	11	10	
205			R	F							1.5		601		1/1/1900 0:00	11	10	
206			R	F							2		552		1/1/1900 0:00	10	11	
207			R	F							3		132		1/1/1900 0:00	10	11	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
166			100							
167			100							
168			100							
169			100							
170			100							
171			100							
172			100							
173			100							
174			100							
175			324							
176			324							
177			324							
178			324							
179			100							
180			100							
181			338							
182			100							
183			338							
184			338							
185			338							
186			338							
187			338							
188			100							
189			100							
190			264							
191			262							
192			100							
193			100							
194			100							
195			100							
196			100							
197			100							
198			100							
199			100							
200			100							
201			340							
202			100							
203			100							
204			100							
205			100							
206			100							
207			100							

		B		C	D
A					
208	MI0001730	DEARBORN		0	3008
209	MI0001730	DEARBORN		0	3009
210	MI0001730	DEARBORN		0	3010
211	MI0001730	DEARBORN		0	3011
212	MI0001800	DETROIT CITY OF		0	1003
213	MI0001800	DETROIT CITY OF		0	1005
214	MI0001800	DETROIT CITY OF		0	1007
215	MI0001800	DETROIT CITY OF		0	1008
216	MI0001800	DETROIT CITY OF		0	1009
217	MI0001800	DETROIT CITY OF		0	1012
218	MI0001800	DETROIT CITY OF		0	1015
219	MI0001800	DETROIT CITY OF		0	1023
220	MI0001800	DETROIT CITY OF		0	1027
221	MI0001800	DETROIT CITY OF		0	1028
222	MI0001800	DETROIT CITY OF		0	1029
223	MI0001800	DETROIT CITY OF		0	1035
224	MI0001800	DETROIT CITY OF		0	1036
225	MI0001800	DETROIT CITY OF		0	1037
226	MI0001800	DETROIT CITY OF		0	1038
227	MI0001800	DETROIT CITY OF		0	1039
228	MI0001800	DETROIT CITY OF		0	1040
229	MI0001800	DETROIT CITY OF		0	1044
230	MI0001800	DETROIT CITY OF		0	1045
231	MI0001800	DETROIT CITY OF		0	1046
232	MI0001800	DETROIT CITY OF		0	1047
233	MI0001800	DETROIT CITY OF		0	1048
234	MI0001800	DETROIT CITY OF		0	1049
235	MI0001800	DETROIT CITY OF		0	1050
236	MI0001800	DETROIT CITY OF		0	1051
237	MI0001800	DETROIT CITY OF		0	1052
238	MI0001800	DETROIT CITY OF		0	1053
239	MI0001800	DETROIT CITY OF		0	1054
240	MI0001800	DETROIT CITY OF		0	1055
241	MI0001800	DETROIT CITY OF		0	1056
242	MI0001800	DETROIT CITY OF		0	1057
243	MI0001800	DETROIT CITY OF		0	1058
244	MI0001800	DETROIT CITY OF		0	1059
245	MI0001800	DETROIT CITY OF		0	1060
246	MI0001800	DETROIT CITY OF		0	1061
247	MI0001800	DETROIT CITY OF		0	1062
248	MI0001800	DETROIT CITY OF		0	1063
249	MI0001800	DETROIT CITY OF		0	1064



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
208			R	F							4		77		1/1/1900 0:00	11	10	
209			R	F							6		34		1/1/1900 0:00	11	10	
210			R	F							8		16		1/1/1900 0:00	11	10	
211			R	F							10		24		1/1/1900 0:00	11	10	
212			R	C	4A					340				46500000	7/1/2010 0:00	1	20	
213			H	C	4A					340				50400000	7/1/2010 0:00	20	1	
214			H	C	4A					340				43600000	7/1/2010 0:00	20	1	
215			R	C	4A					340				3025000	7/1/2010 0:00	1	20	
216			R	C	4A					340				17200000	7/1/2010 0:00	1	20	
217			H	C						240				1/1/1900 0:00	11			
218																		
219			H	C	4A					540				1.21E+08	7/1/2011 0:00	20	1	
220			H	C	4A					540				98500000	7/1/2011 0:00	1	20	
221			H	C	4A					540				1.64E+08	7/1/2011 0:00	1	20	
222																		
223			H	C	4A									2600000	7/1/2006 0:00	20		
224			N	C	4A					20				12200000	6/1/2004 0:00	20		
225			H	C	4A									7500000	7/1/2006 0:00	20		
226			N	C	4A									30000000	7/1/2006 0:00	20		
227			N	C	4A									35100000	7/1/2006 0:00	20		
228			H	C	4A									1100000	7/1/2006 0:00	20		
229			N	C	4A									30200000	6/1/2004 0:00	20		
230			N	C	4A					10				9100000	6/1/2004 0:00	20		
231			H	F	4A					400					1/1/1900 0:00	20		
232			H	F	4A					240					1/1/1900 0:00	20		
233			H	F	4A					108.8					1/1/1900 0:00	20		
234																		
235			H	F	4A					30					1/1/1900 0:00	20		
236			H	F	4A					24.4					1/1/1900 0:00	20		
237																		
238			H	F	4A					108.46					1/1/1900 0:00	20		
239																		
240			H	F	4A					162					1/1/1900 0:00	20		
241																		
242			H	F	4A					225					1/1/1900 0:00	20		
243			H	F	4A					91.68					1/1/1900 0:00	20		
244																		
245			H	F	4A					28.52					1/1/1900 0:00	20		
246																		
247			H	F	4A					326.5					1/1/1900 0:00	20		
248																		
249			H	F	4A					50					1/1/1900 0:00	20		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
208			100							
209			100							
210			100							
211			100							
212			340							
213			340							
214			340							
215			326	340						
216			326	340						
217			308	288						
218			254							
219			340	326						
220			326	340						
221			288	340	326					
222			254							
223			100							
224			100							
225			328							
226			100							
227			100							
228			100							
229			100							
230			100							
231			100							
232			100							
233			100							
234			262							
235			100							
236			100							
237			262							
238			100							
239			262							
240			100							
241			262							
242			100							
243			100							
244			262							
245			100							
246			262							
247			100							
248			262							
249			100							

	A	B	C	D
250	MI0001800	DETROIT CITY OF	0	1065
251	MI0001800	DETROIT CITY OF	0	1066
252	MI0001800	DETROIT CITY OF	0	1067
253	MI0001800	DETROIT CITY OF	0	1068
254	MI0001800	DETROIT CITY OF	0	1069
255	MI0001800	DETROIT CITY OF	0	1070
256	MI0001800	DETROIT CITY OF	0	1071
257	MI0001800	DETROIT CITY OF	0	1072
258	MI0001800	DETROIT CITY OF	0	1073
259	MI0001800	DETROIT CITY OF	0	1074
260	MI0001800	DETROIT CITY OF	0	1075
261	MI0001800	DETROIT CITY OF	0	1076
262	MI0001800	DETROIT CITY OF	0	1077
263	MI0001800	DETROIT CITY OF	0	1078
264	MI0001800	DETROIT CITY OF	0	1079
265	MI0001800	DETROIT CITY OF	0	1080
266	MI0001800	DETROIT CITY OF	0	1081
267	MI0001800	DETROIT CITY OF	0	1082
268	MI0001800	DETROIT CITY OF	0	1083
269	MI0001800	DETROIT CITY OF	0	1084
270	MI0001800	DETROIT CITY OF	0	1085
271	MI0001800	DETROIT CITY OF	0	1086
272	MI0001800	DETROIT CITY OF	0	1087
273	MI0001800	DETROIT CITY OF	0	1088
274	MI0001800	DETROIT CITY OF	0	2004
275	MI0001800	DETROIT CITY OF	0	2007
276	MI0001800	DETROIT CITY OF	0	2008
277	MI0001800	DETROIT CITY OF	0	2010
278	MI0001800	DETROIT CITY OF	0	2012
279	MI0001800	DETROIT CITY OF	0	2013
280	MI0001800	DETROIT CITY OF	0	2014
281	MI0001800	DETROIT CITY OF	0	2015
282	MI0001800	DETROIT CITY OF	0	2017
283	MI0001800	DETROIT CITY OF	0	2018
284	MI0001800	DETROIT CITY OF	0	2019
285	MI0001800	DETROIT CITY OF	0	2020
286	MI0001800	DETROIT CITY OF	0	2021
287	MI0001800	DETROIT CITY OF	0	2022
288	MI0001800	DETROIT CITY OF	0	2023
289	MI0001800	DETROIT CITY OF	0	2025
290	MI0001800	DETROIT CITY OF	0	2029
291	MI0001800	DETROIT CITY OF	0	2030





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
250			H	F	4A					14					1/1/1900 0:00	20		
251			H	F	4A					21					1/1/1900 0:00	20		
252			H	F	4A					18					1/1/1900 0:00	20		
253			H	F	4A					40.7					1/1/1900 0:00	20		
254																		
255			H	F	4A					6.6					1/1/1900 0:00	20		
256			H	F						10					1/1/1900 0:00	20		
257			H	F	4A					10					1/1/1900 0:00	20		
258			H	F	4A					6.6					1/1/1900 0:00	20		
259			H	F	4A					10					1/1/1900 0:00	20		
260			H	F	4A					10					1/1/1900 0:00	20		
261			H	F	4A					20					1/1/1900 0:00	20		
262			H	F	4A					10					1/1/1900 0:00	20		
263			H	F	4A					6.8					1/1/1900 0:00	20		
264			H	F	4A					20					1/1/1900 0:00	20		
265			H	F	4A					10					1/1/1900 0:00	20		
266			H	F	4A					4					1/1/1900 0:00	20		
267			H	F	4A					9.5					1/1/1900 0:00	20		
268			R	C	4A					340				6830000	7/1/2010 0:00	1	10	
269																		
270			H	C	4A					540				49200000	7/1/2010 0:00	1	10	
271																		
272																		
273			N	C										38100000	7/1/2010 0:00	1	10	
274			N	C	4A					42	127000			50475000	7/1/2006 0:00	20		
275			N	C	4A					42	13900			9500000	7/1/2006 0:00	1	20	
276			N	C	4A					72				1.44E+08	7/1/2006 0:00	20		
277			R	C	4A					96	25000			17700000	7/1/2006 0:00	1	20	
278			N	C	4A					60	58512			23000000	7/1/2006 0:00	20		
279			N	C	4A					72	10560			42000000	7/1/2006 0:00	20		
280																		
281																		
282																		
283																		
284			N	C	4A							84480		1.04E+08	2/1/2005 0:00	20		
285			N	C	4A							211200		3.88E+08	2/1/2005 0:00	20		
286			N	C	4A					36	31680			16500000	2/1/2005 0:00	20		
287			N	C	4A					72	31680			42600000	2/1/2005 0:00	20		
288			R	C	4A					42	5280			2700000	2/1/2005 0:00	20		
289			R	C	4A					24	10560			4100000	2/1/2005 0:00	20		
290																		
291																		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
250			100							
251			100							
252			100							
253			100							
254			262							
255			100							
256			100							
257			100							
258			100							
259			100							
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261			100							
262			100							
263			100							
264			100							
265			100							
266			100							
267			100							
268			326	340						
269			262							
270			340	326						
271			262							
272			262							
273			400	212						
274			100							
275			336							
276			336							
277			100							
278			100							
279			100							
280			250							
281			250							
282			250							
283			250							
284			100							
285			100							
286			100							
287			100							
288			100							
289			100							
290			250							
291			250							

	A	B	C	D
292	MI0001800	DETROIT CITY OF	0	2031
293	MI0001800	DETROIT CITY OF	0	2032
294	MI0001800	DETROIT CITY OF	0	2033
295	MI0001800	DETROIT CITY OF	0	2034
296	MI0001800	DETROIT CITY OF	0	2035
297	MI0001800	DETROIT CITY OF	0	2036
298	MI0001800	DETROIT CITY OF	0	2037
299	MI0001800	DETROIT CITY OF	0	2038
300	MI0001800	DETROIT CITY OF	0	2039
301	MI0001800	DETROIT CITY OF	0	3000
302	MI0001800	DETROIT CITY OF	0	3001
303	MI0001800	DETROIT CITY OF	0	3002
304	MI0001800	DETROIT CITY OF	0	3003
305	MI0001800	DETROIT CITY OF	0	3004
306	MI0001800	DETROIT CITY OF	0	3005
307	MI0001800	DETROIT CITY OF	0	3006
308	MI0001800	DETROIT CITY OF	0	3007
309	MI0001800	DETROIT CITY OF	0	3008
310	MI0001800	DETROIT CITY OF	0	3009
311	MI0001800	DETROIT CITY OF	0	3010
312	MI0001800	DETROIT CITY OF	0	3011
313	MI0001800	DETROIT CITY OF	0	3012
314	MI0001800	DETROIT CITY OF	0	3013
315	MI0001800	DETROIT CITY OF	0	3014
316	MI0001800	DETROIT CITY OF	0	3015
317	MI0001800	DETROIT CITY OF	0	3016
318	MI0001800	DETROIT CITY OF	0	3017
319	MI0001800	DETROIT CITY OF	0	3018
320	MI0001800	DETROIT CITY OF	0	3019
321	MI0001800	DETROIT CITY OF	0	3020
322	MI0001800	DETROIT CITY OF	0	3021
323	MI0001800	DETROIT CITY OF	0	3022
324	MI0001800	DETROIT CITY OF	0	3023
325	MI0001800	DETROIT CITY OF	0	3024
326	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1000
327	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1001
328	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1002
329	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1003
330	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1004
331	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1005
332	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1006
333	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1007



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
292			R	C	4A						6	2082788			1/1/1900 0:00	20		
293			R	C	4A						8	2297860			1/1/1900 0:00	20		
294			R	C	4A						10	97744			1/1/1900 0:00	20		
295			R	C	4A						12	633032			1/1/1900 0:00	20		
296			R	C	4A						12	284522			1/1/1900 0:00	20		
297			R	C	4A						20	3464			1/1/1900 0:00	20		
298			N	C	4A						42	36720		36400000	7/1/2011 0:00	10	1	
299			N	C	4A						48	15000		20000000	7/1/2011 0:00	1	10	
300			R	C	4A									2.00E+08	7/1/2011 0:00	10	1	
301																		
302																		
303																		
304			N	C	4A									2200000	7/1/2006 0:00	20		
305			R	C	1D						1		107685		1/1/1900 0:00	20		
306			R	F	4A						10				1/1/1900 0:00	20		
307			R	F	4A						12				1/1/1900 0:00	20		
308			R	F	4A						14				1/1/1900 0:00	20		
309			R	F	4A						16				1/1/1900 0:00	20		
310			R	F	4A						18				1/1/1900 0:00	20		
311			R	F	4A						20				1/1/1900 0:00	20		
312			R	F	4A						24				1/1/1900 0:00	20		
313			R	F	4A						30				1/1/1900 0:00	20		
314			R	F	4A						36				1/1/1900 0:00	20		
315			R	F	4A						48				1/1/1900 0:00	20		
316			R	F	4A						6				1/1/1900 0:00	20		
317			R	F	4A						60				1/1/1900 0:00	20		
318			R	F	4A						8				1/1/1900 0:00	20		
319			R	C	4A						1				1/1/1900 0:00	20		
320			R	C	4A									7600000	7/1/2011 0:00	10	1	
321																		
322																		
323			R	C	4A									29500000	7/1/2010 0:00	1	10	
324			R	C	4A									1300000	7/1/2011 0:00	1	10	
325			R	C										1200000	7/1/2011 0:00	1	10	
326			H	F	4A					15					1/1/1900 0:00	10		
327			H	C	4A					2					1/1/1900 0:00	10		
328			H	C	4A					1.44					1/1/1900 0:00	10		
329			H	C	4A					2.16					1/1/1900 0:00	10		
330			R	C	4A					0.432					1/1/1900 0:00	10		
331			R	C	4A					0.576					1/1/1900 0:00	10		
332			R	C	4A					0.468					1/1/1900 0:00	10		
333			R	C	4A					0.72					1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
292			100							
293			100							
294			100							
295			100							
296			100							
297			100							
298			100							
299			100							
300			336	328						
301			262							
302			262							
303			262							
304			100							
305			340							
306			100							
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313			100							
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315			100							
316			100							
317			100							
318			100							
319			340							
320			288							
321			254							
322			254							
323			100							
324			340							
325			100							
326			100							
327			100							
328			100							
329			100							
330			244							
331			244							
332			244							
333			244							

	A	B	C	D
334	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1008
335	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1009
336	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1011
337	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1012
338	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	1013
339	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	2000
340	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	2001
341	MI0001995	EAST LANSING MERIDIAN WATER AUTHORITY	16986	2002
342	MI0002020	EATON RAPIDS, CITY OF	220610	1000
343	MI0002020	EATON RAPIDS, CITY OF	220610	1002
344	MI0002020	EATON RAPIDS, CITY OF	220610	1003
345	MI0002020	EATON RAPIDS, CITY OF	220610	1004
346	MI0002020	EATON RAPIDS, CITY OF	220610	1005
347	MI0002020	EATON RAPIDS, CITY OF	220610	1006
348	MI0002020	EATON RAPIDS, CITY OF	220610	1007
349	MI0002020	EATON RAPIDS, CITY OF	220610	1008
350	MI0002020	EATON RAPIDS, CITY OF	220610	1009
351	MI0002020	EATON RAPIDS, CITY OF	220610	1010
352	MI0002020	EATON RAPIDS, CITY OF	220610	1011
353	MI0002020	EATON RAPIDS, CITY OF	220610	1015
354	MI0002020	EATON RAPIDS, CITY OF	220610	1016
355	MI0002020	EATON RAPIDS, CITY OF	220610	1017
356	MI0002020	EATON RAPIDS, CITY OF	220610	2000
357	MI0002020	EATON RAPIDS, CITY OF	220610	2001
358	MI0002020	EATON RAPIDS, CITY OF	220610	2002
359	MI0002020	EATON RAPIDS, CITY OF	220610	2003
360	MI0002020	EATON RAPIDS, CITY OF	220610	2004
361	MI0002020	EATON RAPIDS, CITY OF	220610	3000
362	MI0002020	EATON RAPIDS, CITY OF	220610	3001
363	MI0002020	EATON RAPIDS, CITY OF	220610	3002
364	MI0002020	EATON RAPIDS, CITY OF	220610	3003
365	MI0002020	EATON RAPIDS, CITY OF	220610	3004
366	MI0002020	EATON RAPIDS, CITY OF	220610	3005
367	MI0002020	EATON RAPIDS, CITY OF	220610	3006
368	MI0002020	EATON RAPIDS, CITY OF	220610	3007
369	MI0002170	ESCANABA	422400	1001
370	MI0002170	ESCANABA	422400	1002
371	MI0002170	ESCANABA	422400	1005
372	MI0002170	ESCANABA	422400	1006
373	MI0002170	ESCANABA	422400	2000
374	MI0002170	ESCANABA	422400	2001
375	MI0002170	ESCANABA	422400	2002

	E	F	G	H	I	J	K	L	M	N	O	P
334	REHABILITATION OF WELL NOS. 6, 17, 19, 20, 22, 24	R2								A1		
335	REHABILITATION OF WELL NO. 23 AT 550 GPM	R2								A1		
336	REHABILITATION OF WELL NOS. 7, 8, 10, AND 12 AT 60	R2								A1		
337	REHABILITATION OF WELL NOS. 11 & 18 AT 900 GPM EAC	R2								A1		
338	REPLACEMENT OF WTPS AUXILIARY POWER GENERATOR	T99	W4							A1		
339	10% 42-INCH CONCRETE PIPE	X2								A1		
340	10% OF 24-INCH DI PIPE	X2								A2		
341	10% OF 24-INCH DI PIPE	X2								A2		
342	WTP REHAB	T20								A1		
343	REPLACE WELL # 1	R2								A1		
344	REPLACE WELL # 2	R2								A1		
345	REPLACE WELL #S 3 & 4	R2								A1		
346	REHAB WELL # 5	R2								A1		
347	REHAB WELL # 7	R2								A1		
348	REHAB WELL # 8	R2								A1		
349	REHAB OF 0.25 MGD STORAGE TANK	S1								A1		
350	REHAB OF 0.75 MGD STORAGE TANK	S1								A1		
351	ABANDON WELL 1 (#1002)	R5								A1		
352	ABANDON WELL 2 (#1003)	R5								A1		
353	REPLACE GAS GENERATOR	W4								A1		
354	REPLACE DIESEL GENERATOR	W4								A1		
355	REPLACE PROPANE ENGINE	W4								A1		
356	REPLACE UNDER-SIZED (4-6 INCH) WMS AT WATER STREET	M1								A4	A1	
357	CUMBERLAND STREET WM REPLACEMENT	M1								A1		
358	REPLACE 4-INCH WMS AT HAVE/GROVE STREET	M1								A1	A4	
359	MILLER ROAD WM LOOP	M1								A4	A7	
360	REPLACE 10% OF PIPE INVENTORY - 4-INCH CAST IRON	M1								A1	A4	
361	WATER METER REPLACEMENT	M8								A1		
362	WATER METER REPLACEMENT	M8								A1		
363	WATER METER REPLACEMENT	M8								A1		
364	WATER METER REPLACEMENT	M8								A1		
365	REPLACEMENT OF HYDRANTS	M4								A1		
366	REPLACEMENT OF VALVES	M5								A1		
367	REPLACEMENT OF VALVES	M5								A1		
368	REPLACEMENT OF VALVES	M5								A1		
369	WTP REHABILITATION	T10								A1	A6	
370	NORTH WATER TOWER RECOATING AND REPAINTING	S1								A1		
371	SOUTH WATER TOWER PAINTING & REPAIRS	S1								A1		
372	ADDITIONAL SOURCE WATER INTAKE	R7								A1	A6	
373	REPLACEMENT OF LESS THAN OR EQUAL TO 4 - INCH MAIN	M1								A1		
374	REPLACEMENT OF LESS THAN OR EQUAL TO 4 - INCH EXIS	M1								A1		
375	INSTALL DISTRIBUTION LOOPS	M1								A9	A11	A4



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
334			R	C	4A					0.72					1/1/1900 0:00	10		
335			R	C	4A					0.8			1		1/1/1900 0:00	10		
336			R	C	4A					0.864			4		1/1/1900 0:00	10		
337			R	C	4A					1.3			2		1/1/1900 0:00	10		
338			R	F						500			1		1/1/1900 0:00	10		
339			R	F	4A						42	176			1/1/1900 0:00	10		
340			R	F	4A						24	475			1/1/1900 0:00	10		
341			R	F	4A						20	1015			1/1/1900 0:00	10		
342			H	F	4A					2.5			1		1/1/1900 0:00	11	2	
343			R	F	4A					1.44			1		1/1/1900 0:00	10		
344			R	F	4A					0.5			1		1/1/1900 0:00	10		
345			R	F	4A					0.33			2		1/1/1900 0:00	10		
346			H	F	4A					0.432			1		1/1/1900 0:00	10		
347			H	F	4A					1			1		1/1/1900 0:00	10		
348			H	F	4A					0.54			1		1/1/1900 0:00	10		
349			H	F	4A					0.25			1		1/1/1900 0:00	10		
350			H	F	4A					0.75			1		1/1/1900 0:00	10		
351																		
352																		
353			R	F						280			1		1/1/1900 0:00	10		
354			R	F						50			1		1/1/1900 0:00	10		
355			R	F									1		1/1/1900 0:00	10		
356			R	C	4A						12	3000		345000	3/1/2010 0:00	2		
357			R	C	4A						8	2000		220000	3/1/2010 0:00	2		
358			R	C	4A						8	1000		115000	3/1/2010 0:00	2		
359			R	C	4A						12	2500		40000	3/1/2010 0:00	2		
360			R	C							8	13561			1/1/1900 0:00	2	10	
361			R	C	2D						0.625		2475		1/1/1900 0:00	10		
362			R	C	2D						0.75		500		1/1/1900 0:00	10		
363			R	C	2D						2		50		1/1/1900 0:00	10		
364			R	C	2D						4		15		1/1/1900 0:00	10		
365																		
366																		
367																		
368																		
369			H	F	1A					8			1		1/1/1900 0:00	10		
370			H	F	4A					0.5			1		1/1/1900 0:00	10		
371			H	F	4A					0.5			1	425000	4/1/2010 0:00	4	20	11
372			R	C	2B					8			1	3000000	4/1/2010 0:00	20	11	4
373			R	C	4A						8	55950		4755750	5/1/2004 0:00	20		
374			R	C	4A						8	42275		3593375	5/1/2004 0:00	20		
375			N	F							8	6300		535500	5/1/2004 0:00	20		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
334			244							
335			244							
336			244							
337			244							
338			100							
339			100							
340			100							
341			100							
342			308	328	324					
343			244							
344			340	244						
345			244	340						
346			100							
347			100							
348			340							
349			100							
350			100							
351			216							
352			216							
353			100							
354			100							
355			300							
356			100							
357			100							
358			100							
359			100							
360			100							
361			100							
362			100							
363			100							
364			100							
365			264	216						
366			216	264						
367			264	216						
368			264	216						
369			100							
370			100							
371			324							
372			324							
373			324							
374			324							
375			324							

	A	B	C	D
376	MI0002170	ESCANABA	422400	2003
377	MI0002170	ESCANABA	422400	2004
378	MI0002170	ESCANABA	422400	2005
379	MI0002170	ESCANABA	422400	2006
380	MI0002170	ESCANABA	422400	3000
381	MI0002300	FLAT ROCK	275200	2000
382	MI0002300	FLAT ROCK	275200	2001
383	MI0002300	FLAT ROCK	275200	3000
384	MI0002300	FLAT ROCK	275200	3001
385	MI0002310	FLINT, CITY OF	2927860	1000
386	MI0002310	FLINT, CITY OF	2927860	1001
387	MI0002310	FLINT, CITY OF	2927860	1002
388	MI0002310	FLINT, CITY OF	2927860	1003
389	MI0002310	FLINT, CITY OF	2927860	1004
390	MI0002310	FLINT, CITY OF	2927860	1005
391	MI0002310	FLINT, CITY OF	2927860	1006
392	MI0002310	FLINT, CITY OF	2927860	1007
393	MI0002310	FLINT, CITY OF	2927860	1008
394	MI0002310	FLINT, CITY OF	2927860	1009
395	MI0002310	FLINT, CITY OF	2927860	1010
396	MI0002310	FLINT, CITY OF	2927860	1011
397	MI0002310	FLINT, CITY OF	2927860	2000
398	MI0002310	FLINT, CITY OF	2927860	2001
399	MI0002310	FLINT, CITY OF	2927860	2002
400	MI0002310	FLINT, CITY OF	2927860	2003
401	MI0002310	FLINT, CITY OF	2927860	2004
402	MI0002310	FLINT, CITY OF	2927860	2005
403	MI0002310	FLINT, CITY OF	2927860	2006
404	MI0002310	FLINT, CITY OF	2927860	2007
405	MI0002310	FLINT, CITY OF	2927860	2008
406	MI0002310	FLINT, CITY OF	2927860	2009
407	MI0002310	FLINT, CITY OF	2927860	2010
408	MI0002310	FLINT, CITY OF	2927860	2011
409	MI0002310	FLINT, CITY OF	2927860	2012
410	MI0002310	FLINT, CITY OF	2927860	2013
411	MI0002310	FLINT, CITY OF	2927860	2014
412	MI0002310	FLINT, CITY OF	2927860	3000
413	MI0002310	FLINT, CITY OF	2927860	3001
414	MI0002310	FLINT, CITY OF	2927860	3002
415	MI0002310	FLINT, CITY OF	2927860	3003
416	MI0002310	FLINT, CITY OF	2927860	3004
417	MI0002310	FLINT, CITY OF	2927860	3005



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
376			R	C	4A						10	150		13500	5/1/2004 0:00	20		
377			N	C							12	35900		3231000	5/1/2004 0:00	20		
378			N	C							16	9700		921500	5/1/2004 0:00	20		
379			R	C	4A						12	4700		423000	5/1/2004 0:00	20		
380			R	F	4A						0.625		4822		1/1/1900 0:00	20		
381			R	C	4A						8	52850			1/1/1900 0:00	1	10	
382			R	C	4A						8	14350			1/1/1900 0:00	1	10	
383			N	F							1		3025		1/1/1900 0:00	10	6	
384			R	C	1D						0.75		200		1/1/1900 0:00	10	6	
385			R	F	4A									978000	9/1/2011 0:00	2	10	
386			E	F	4A									40258000	9/1/2011 0:00	2	10	
387			R	F	4A					8			1		1/1/1900 0:00	20		
388			R	F	4A					12			1		1/1/1900 0:00	20		
389			R	F	4A					16			1		1/1/1900 0:00	20		
390																		
391																		
392																		
393		H	C	4A									1	241000	7/1/2011 0:00	3	10	2
394		H	F	4A						20			1		1/1/1900 0:00	20		
395		H	F	4A						12			1		1/1/1900 0:00	20		
396		H	F	4A						24			1		1/1/1900 0:00	20		
397		R	C	4A										12000000	2/1/2007 0:00	20		
398		R	C	4A										1000000	2/1/2007 0:00	20		
399																		
400																		
401		R	C	4A							8	91000			1/1/1900 0:00	20		
402		R	C	4A							8	45500			1/1/1900 0:00	20		
403		R	F	4A							12	15600			1/1/1900 0:00	20		
404		R	F	4A							16	10400			1/1/1900 0:00	20		
405		R	F	4A							18	4160			1/1/1900 0:00	2	1	20
406		R	C								24	7800			1/1/1900 0:00	20		
407		R	C								30	1040			1/1/1900 0:00	20		
408		R	C	4A							36	715			1/1/1900 0:00	20		
409																		
410		R	F	4A							42	95			1/1/1900 0:00	20		
411		R	C	4A							72	3744			1/1/1900 0:00	20		
412		R	C	4A							0.625		32931		1/1/1900 0:00	10		
413		R	C	4A							1		471		1/1/1900 0:00	10		
414		R	C	4A							1.5		393		1/1/1900 0:00	10		
415		R	C	4A							2		20		1/1/1900 0:00	10		
416		R	F	4A							0.625		439		1/1/1900 0:00	10		
417		R	F	4A							1		281		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
376			324							
377			324							
378			324							
379			324							
380			324							
381			340							
382			100							
383			100							
384			100							
385			336	328						
386			348	252	336					
387			100							
388			100							
389			100							
390			216							
391			216							
392			262							
393			338	324						
394			100							
395			100							
396			100							
397			100							
398			100							
399			216							
400			216							
401			328							
402			328							
403			328							
404			328							
405			340							
406			340							
407			340							
408			100							
409			216							
410			100							
411			100							
412			324							
413			324							
414			324							
415			324							
416			324							
417			324							

	A	B	C	D
418	MI0002310	FLINT, CITY OF	2927860	3006
419	MI0002310	FLINT, CITY OF	2927860	3007
420	MI0002310	FLINT, CITY OF	2927860	3008
421	MI0002310	FLINT, CITY OF	2927860	3009
422	MI0002310	FLINT, CITY OF	2927860	3010
423	MI0002310	FLINT, CITY OF	2927860	3011
424	MI0002310	FLINT, CITY OF	2927860	3012
425	MI0002310	FLINT, CITY OF	2927860	3013
426	MI0002310	FLINT, CITY OF	2927860	3014
427	MI0002310	FLINT, CITY OF	2927860	3015
428	MI0002310	FLINT, CITY OF	2927860	3017
429	MI0002310	FLINT, CITY OF	2927860	3018
430	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	1000
431	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	1001
432	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	1002
433	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2000
434	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2001
435	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2002
436	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2003
437	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2004
438	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2005
439	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2006
440	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2007
441	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2008
442	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2009
443	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2010
444	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2011
445	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2012
446	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2013
447	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2014
448	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2015
449	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	2016
450	MI0002385	CHARTER TOWNSHIP OF FORT GRATIOT	371818	3000
451	MI0002420	FRANKENMUTH, CITY OF	219921	1000
452	MI0002420	FRANKENMUTH, CITY OF	219921	1001
453	MI0002420	FRANKENMUTH, CITY OF	219921	2000
454	MI0002420	FRANKENMUTH, CITY OF	219921	2001
455	MI0002420	FRANKENMUTH, CITY OF	219921	3000
456	MI0002420	FRANKENMUTH, CITY OF	219921	3001
457	MI0002420	FRANKENMUTH, CITY OF	219921	3002
458	MI0002420	FRANKENMUTH, CITY OF	219921	3003
459	MI0002420	FRANKENMUTH, CITY OF	219921	3004





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
418			R	F	4A						1.5		350		1/1/1900 0:00	10		
419			R	F	4A						2		368		1/1/1900 0:00	10		
420			R	F	4A						3		107		1/1/1900 0:00	10		
421			R	F	4A						4		71		1/1/1900 0:00	10		
422			R	F	4A						6		47		1/1/1900 0:00	10		
423			R	F	4A						8		3		1/1/1900 0:00	10		
424			R	F	4A						10		6		1/1/1900 0:00	10		
425			R	F	4A						16		1		1/1/1900 0:00	10		
426			R	F	4A						24		1		1/1/1900 0:00	10		
427			R	C	1D						1		18000		1/1/1900 0:00	10		
428			R	F	4A						1		3238		1/1/1900 0:00	10		
429			R	F	4A								275		1/1/1900 0:00	10		
430			H	F	4A					0.2			1		1/1/1900 0:00	1		
431			R	F	4A								1		1/1/1900 0:00	1		
432			R	F	4A					15			1		1/1/1900 0:00	1		
433			R	C	4A						16	2700			1/1/1900 0:00	1		
434																		
435																		
436																		
437																		
438																		
439																		
440			R	C	4A						8	1470			1/1/1900 0:00	1		
441			R	C	4A						8	2000			1/1/1900 0:00	1		
442			R	C	4A						8	895			1/1/1900 0:00	1		
443			R	C	4A						8	525			1/1/1900 0:00	1		
444			R	C	4A						8	415			1/1/1900 0:00	1		
445			R	C	4A						8	970			1/1/1900 0:00	1		
446			R	C	4A						8	240			1/1/1900 0:00	1		
447			R	C	4A						6	5920			1/1/1900 0:00	10	1	
448			R	C	4A						8	9270			1/1/1900 0:00	10	1	
449			R	C	4A						10	8377			1/1/1900 0:00	1	10	
450			R	F	4A						0.625		4969		1/1/1900 0:00	10		
451			H	F	4A					0.4			1		1/1/1900 0:00	11	10	
452			H	F	4A					0.3			1		1/1/1900 0:00	10	11	
453			R	C	4A						20	15430		3600000	10/1/2008 0:00	10	4	
454			R	F	4A						8	6562			1/1/1900 0:00	11	10	
455			R	F	4A						0.625		2017		1/1/1900 0:00	11	10	
456			R	F	4A						0.75		29		1/1/1900 0:00	10	11	
457			R	F	4A						1		151		1/1/1900 0:00	11	10	
458			R	F	4A						1.5		68		1/1/1900 0:00	11	10	
459			R	F	4A						2		29		1/1/1900 0:00	11	10	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
418			324							
419			324							
420			324							
421			324							
422			324							
423			324							
424			324							
425			324							
426			324							
427			334	332	324					
428			324	218						
429			218	324	328					
430			100							
431			326							
432			328							
433			100							
434			224							
435			224							
436			224							
437			224							
438			224							
439			224							
440			100							
441			100							
442			100							
443			100							
444			100							
445			100							
446			100							
447			100							
448			100							
449			100							
450			344							
451			100							
452			100							
453			100							
454			100							
455			340							
456			100							
457			100							
458			100							
459			100							

	A	B	C	D
460	MI0002420	FRANKENMUTH, CITY OF	219921	3005
461	MI0002420	FRANKENMUTH, CITY OF	219921	3006
462	MI0002420	FRANKENMUTH, CITY OF	219921	3007
463	MI0002420	FRANKENMUTH, CITY OF	219921	3008
464	MI0002420	FRANKENMUTH, CITY OF	219921	3009
465	MI0002420	FRANKENMUTH, CITY OF	219921	3010
466	MI0002420	FRANKENMUTH, CITY OF	219921	3011
467	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1000
468	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1001
469	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1002
470	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1003
471	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1004
472	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1005
473	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1006
474	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1007
475	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1008
476	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1009
477	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1010
478	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1011
479	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1012
480	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1013
481	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1014
482	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1015
483	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1016
484	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1017
485	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1018
486	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1019
487	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	1020
488	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2000
489	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2002
490	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2004
491	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2005
492	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2006
493	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2007
494	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2008
495	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2009
496	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2010
497	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	2012
498	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3000
499	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3001
500	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3002
501	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3003



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
460			R	F	4A						3		19		1/1/1900 0:00	10	11	
461			R	F	4A						4		8		1/1/1900 0:00	11	10	
462			R	F	4A						0.75		1		1/1/1900 0:00	10	11	
463			R	F	4A						1		2		1/1/1900 0:00	11	10	
464			R	F	4A						1.5		2		1/1/1900 0:00	11	10	
465			R	F	4A						2		8		1/1/1900 0:00	11	10	
466			R	F	4A						3		1		1/1/1900 0:00	11	10	
467			N	F	4A					2			1		1/1/1900 0:00	20		
468			N	F	4A					1.5			1	250000	6/1/2005 0:00	20		
469			N	F	4A					1.5			1	250000	6/1/2005 0:00	20		
470			H	F	4A					6.7			1		1/1/1900 0:00	20		
471			H	F	4A					13			1		1/1/1900 0:00	10	20	
472			H	F	4A					1			1		1/1/1900 0:00	20		
473			H	F	4A					2			1		1/1/1900 0:00	20		
474			H	F	4A					2			1		1/1/1900 0:00	20		
475			H	F	4A					4			1		1/1/1900 0:00	20		
476			H	F	4A					2.4			1		1/1/1900 0:00	20		
477			N	F	2B								1	2.99E+08	9/1/2009 0:00	10	2	
478			H	F	4A					5			1		1/1/1900 0:00	10		
479			H	F	4A					1			1		1/1/1900 0:00	10		
480			H	F	4A					0.5			1		1/1/1900 0:00	10		
481			H	F	4A					6.3			1		1/1/1900 0:00	10		
482			H	F	4A					1			1		1/1/1900 0:00	10		
483			H	F	4A					10			2		1/1/1900 0:00	10		
484			H	F	4A					2			1		1/1/1900 0:00	10		
485			H	F	4A					30			1		1/1/1900 0:00	10		
486			H	F	4A					3.5			1		1/1/1900 0:00	10		
487			H	F	4A					18			1		1/1/1900 0:00	10		
488			R	C	4A						12	5500			1/1/1900 0:00	20		
489			R	C	4A						8	8500			1/1/1900 0:00	20		
490			N	F	4A						30	13500			1/1/1900 0:00	20		
491			N	F	4A						24	4000			1/1/1900 0:00	20		
492			N	F	4A						20	7200			1/1/1900 0:00	20		
493			N	F	4A						30	58000			1/1/1900 0:00	20		
494			N	F	4A						24	21600			1/1/1900 0:00	20		
495			N	F	4A						20	58000			1/1/1900 0:00	20		
496			N	F	4A						12	16000			1/1/1900 0:00	20		
497			N	F	4A						24	5600			1/1/1900 0:00	20		
498			R	F	4A						12		1		1/1/1900 0:00	20		
499			R	F	4A						12		1		1/1/1900 0:00	20		
500			R	F	4A						12		1		1/1/1900 0:00	20		
501			R	F	4A						12		1		1/1/1900 0:00	20		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
460			100							
461			100							
462			100							
463			340							
464			100							
465			100							
466			100							
467			308							
468			100							
469			100							
470			340							
471			100							
472			100							
473			100							
474			100							
475			100							
476			100							
477			336	326	182					
478			100							
479			100							
480			100							
481			100							
482			100							
483			100							
484			100							
485			100							
486			100							
487			100							
488			100							
489			100							
490			308							
491			308							
492			308							
493			308							
494			308							
495			308							
496			308							
497			308							
498			100							
499			100							
500			100							
501			100							

	A	B	C	D
502	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3004
503	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3005
504	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3006
505	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3007
506	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3008
507	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3009
508	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3010
509	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3011
510	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3012
511	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3013
512	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3014
513	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3015
514	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3016
515	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3017
516	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3018
517	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3019
518	MI0002615	GENESEE COUNTY WATER SYSTEM	1759824	3020
519	MI0002770	GRAND LEDGE, CITY OF	248785	1000
520	MI0002770	GRAND LEDGE, CITY OF	248785	1001
521	MI0002770	GRAND LEDGE, CITY OF	248785	1002
522	MI0002770	GRAND LEDGE, CITY OF	248785	1003
523	MI0002770	GRAND LEDGE, CITY OF	248785	1004
524	MI0002770	GRAND LEDGE, CITY OF	248785	1005
525	MI0002770	GRAND LEDGE, CITY OF	248785	1006
526	MI0002770	GRAND LEDGE, CITY OF	248785	1007
527	MI0002770	GRAND LEDGE, CITY OF	248785	1008
528	MI0002770	GRAND LEDGE, CITY OF	248785	1009
529	MI0002770	GRAND LEDGE, CITY OF	248785	1010
530	MI0002770	GRAND LEDGE, CITY OF	248785	1012
531	MI0002770	GRAND LEDGE, CITY OF	248785	1013
532	MI0002770	GRAND LEDGE, CITY OF	248785	2000
533	MI0002770	GRAND LEDGE, CITY OF	248785	2001
534	MI0002770	GRAND LEDGE, CITY OF	248785	2002
535	MI0002770	GRAND LEDGE, CITY OF	248785	2003
536	MI0002770	GRAND LEDGE, CITY OF	248785	2004
537	MI0002770	GRAND LEDGE, CITY OF	248785	2005
538	MI0002770	GRAND LEDGE, CITY OF	248785	2006
539	MI0002770	GRAND LEDGE, CITY OF	248785	3000
540	MI0002770	GRAND LEDGE, CITY OF	248785	3001
541	MI0002770	GRAND LEDGE, CITY OF	248785	3002
542	MI0002770	GRAND LEDGE, CITY OF	248785	3003
543	MI0002770	GRAND LEDGE, CITY OF	248785	3004





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
502		R	F	4A							6		120		1/1/1900 0:00	20		
503		R	F	4A							8		120		1/1/1900 0:00	20		
504		R	F	4A							10		80		1/1/1900 0:00	20		
505		R	F	4A							12		40		1/1/1900 0:00	20		
506		R	F	4A							16		20		1/1/1900 0:00	20		
507		R	F	4A							18		5		1/1/1900 0:00	20		
508		R	F	4A							20		5		1/1/1900 0:00	20		
509		R	F	4A							24		5		1/1/1900 0:00	20		
510		R	F	4A							30		5		1/1/1900 0:00	20		
511		R	F	4A							6		600		1/1/1900 0:00	20		
512		R	C	4A							0.625		16010		1/1/1900 0:00	20		
513		R	C	4A							1		1159		1/1/1900 0:00	20		
514		R	C	4A							1.5		692		1/1/1900 0:00	20		
515		R	C	4A							2		461		1/1/1900 0:00	20		
516		R	C	4A							3		63		1/1/1900 0:00	20		
517		R	C	4A							4		52		1/1/1900 0:00	20		
518		R	C	4A							6		15		1/1/1900 0:00	20		
519		R	C	4A						0.58			1		1/1/1900 0:00	6	10	
520		R	C	4A						1			1		1/1/1900 0:00	6	10	
521		R	C	4A						0.72			1		1/1/1900 0:00	6	10	
522		H	C	4A						2.5			1		1/1/1900 0:00	10		
523		R	C	4A						156			1		1/1/1900 0:00	10	6	
524		R	C	4A						60			1		1/1/1900 0:00	6	10	
525		H	C	4A						0.5			1		1/1/1900 0:00	6	10	
526		H	C	4A						0.75			1		1/1/1900 0:00	10	6	
527		H	F	4A						4.3			1		1/1/1900 0:00	10	6	
528		R	F	4A						200			1		1/1/1900 0:00	10	6	
529		H	C	4A						0.1			1		1/1/1900 0:00	6	10	
530		H	F	4A						0.58			1		1/1/1900 0:00	10		
531		R	F	4A						0.58			1		1/1/1900 0:00	10	6	
532		R	C	4A							8	1440		240000	1/1/2003 0:00	4	10	
533		R	C	4A							8	1885		310000	1/1/2003 0:00	4	10	
534		R	C	4A							8	1130		235000	1/1/2003 0:00	10	4	
535		R	C	4A										310000	1/1/2003 0:00	10	4	
536		N	C	4A							12	2000		485000	1/1/2003 0:00	10	4	
537																		
538		R	C	4A							8	18009			1/1/1900 0:00	10		
539		R	C	4A							1		3079		1/1/1900 0:00	10		
540		R	C	4A							2		50		1/1/1900 0:00	10		
541																		
542																		
543																		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
502			100							
503			100							
504			100							
505			100							
506			100							
507			100							
508			100							
509			100							
510			100							
511			100							
512			100							
513			100							
514			100							
515			100							
516			100							
517			100							
518			100							
519			324	244						
520			324	244						
521			324	244						
522			100							
523			100							
524			100							
525			100							
526			100							
527			100							
528			100							
529			100							
530			100							
531			324	244						
532			100							
533			100							
534			100							
535			336							
536			100							
537			118	200						
538			100							
539			100							
540			100							
541			216							
542			216							
543			216							

	A	B	C	D
544	MI0002770	GRAND LEDGE, CITY OF	248785	3005
545	MI0002790	GRAND RAPIDS	6391249	1000
546	MI0002790	GRAND RAPIDS	6391249	1001
547	MI0002790	GRAND RAPIDS	6391249	1002
548	MI0002790	GRAND RAPIDS	6391249	1003
549	MI0002790	GRAND RAPIDS	6391249	1004
550	MI0002790	GRAND RAPIDS	6391249	1005
551	MI0002790	GRAND RAPIDS	6391249	1006
552	MI0002790	GRAND RAPIDS	6391249	1007
553	MI0002790	GRAND RAPIDS	6391249	1008
554	MI0002790	GRAND RAPIDS	6391249	1009
555	MI0002790	GRAND RAPIDS	6391249	1010
556	MI0002790	GRAND RAPIDS	6391249	1011
557	MI0002790	GRAND RAPIDS	6391249	1012
558	MI0002790	GRAND RAPIDS	6391249	1013
559	MI0002790	GRAND RAPIDS	6391249	1014
560	MI0002790	GRAND RAPIDS	6391249	1015
561	MI0002790	GRAND RAPIDS	6391249	1016
562	MI0002790	GRAND RAPIDS	6391249	1017
563	MI0002790	GRAND RAPIDS	6391249	1018
564	MI0002790	GRAND RAPIDS	6391249	1019
565	MI0002790	GRAND RAPIDS	6391249	1020
566	MI0002790	GRAND RAPIDS	6391249	1021
567	MI0002790	GRAND RAPIDS	6391249	1022
568	MI0002790	GRAND RAPIDS	6391249	1023
569	MI0002790	GRAND RAPIDS	6391249	1025
570	MI0002790	GRAND RAPIDS	6391249	1026
571	MI0002790	GRAND RAPIDS	6391249	1027
572	MI0002790	GRAND RAPIDS	6391249	1028
573	MI0002790	GRAND RAPIDS	6391249	1029
574	MI0002790	GRAND RAPIDS	6391249	1030
575	MI0002790	GRAND RAPIDS	6391249	1031
576	MI0002790	GRAND RAPIDS	6391249	1032
577	MI0002790	GRAND RAPIDS	6391249	1033
578	MI0002790	GRAND RAPIDS	6391249	1034
579	MI0002790	GRAND RAPIDS	6391249	1035
580	MI0002790	GRAND RAPIDS	6391249	1036
581	MI0002790	GRAND RAPIDS	6391249	1037
582	MI0002790	GRAND RAPIDS	6391249	1038
583	MI0002790	GRAND RAPIDS	6391249	1039
584	MI0002790	GRAND RAPIDS	6391249	1040
585	MI0002790	GRAND RAPIDS	6391249	1041



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
544			H	F	4A					135			1		1/1/1900 0:00	10	20	
545			H	F	4A					56			1		1/1/1900 0:00	20	10	
546			H	F	4A					111			1		1/1/1900 0:00	20	10	
547			H	F	4A					16			1		1/1/1900 0:00	10	1	20
548			H	F	4A					5			1		1/1/1900 0:00	10	1	20
549			H	F	4A					5			1		1/1/1900 0:00	1	20	10
550			H	F	4A					5			1		1/1/1900 0:00	1	20	10
551			H	F	4A					5			1		1/1/1900 0:00	1	20	10
552			H	F	4A					8			1		1/1/1900 0:00	10	20	1
553			H	F	4A					16			1		1/1/1900 0:00	10	20	1
554			H	F	4A					5			1		1/1/1900 0:00	1	20	10
555			H	F	4A					5			1		1/1/1900 0:00	20	1	10
556			H	F	4A					5			1		1/1/1900 0:00	10	1	20
557																		
558																		
559		N	F	F	4A					1.5			1	3820000	10/1/2010 0:00	1	10	20
560		N	F	F	4A					1.5			1	4490244	10/1/2010 0:00	10	20	1
561		N	C		4A					1.5			1	4503000	10/1/2010 0:00	10	1	20
562		N	F	F	4A					0.5			1	2055000	10/1/2010 0:00	1	20	10
563		H	F	F	4A					1.25			1		1/1/1900 0:00	1	10	20
564		H	F	F	4A					1.25			1		1/1/1900 0:00	20	1	10
565		H	F	F	4A					1			1		1/1/1900 0:00	10	1	20
566		H	F	F	4A					1.25			1		1/1/1900 0:00	10	20	1
567		R	F	F	4A					7.7			2	4071000	10/1/2010 0:00	1	20	
568		R	F	F	4A					5			2	1415000	10/1/2010 0:00	1	20	
569		R	F	F	4A					6			1	771000	10/1/2010 0:00	20	1	
570		H	F	F	4A								1	1418000	11/1/2006 0:00	10	20	
571		H	F	F	4A					15			1		1/1/1900 0:00	10	20	
572		H	F	F	4A					18.3			1		1/1/1900 0:00	10	20	
573		H	F	F	4A					25			1		1/1/1900 0:00	20	10	
574		H	F	F	4A					15			1		1/1/1900 0:00	20	10	
575		H	F	F	4A					25			1		1/1/1900 0:00	10	20	
576		H	F	F	4A					1.25			1		1/1/1900 0:00	10	20	
577		H	F	F	4A					77			1		1/1/1900 0:00	20	10	
578		H	F	F	4A					77			1		1/1/1900 0:00	10	20	
579		H	F	F	4A					4			1		1/1/1900 0:00	20	10	
580		H	F	F	4A					4			1		1/1/1900 0:00	20	10	
581		H	F	F	4A					1.4			1		1/1/1900 0:00	20	10	
582		H	F	F	4A					3			1		1/1/1900 0:00	10	20	
583		H	F	F	4A					6.6			1		1/1/1900 0:00	20	10	
584		H	F	F	4A					5			1		1/1/1900 0:00	20	10	
585		H	F	F	4A					1			1		1/1/1900 0:00	10	20	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
544			216							
545			400	250						
546			324							
547			324							
548			324							
549			324							
550			324							
551			324							
552			324							
553			324							
554			324							
555			324							
556			322	164	324					
557			262	340	612	324				
558			324	262	612	340				
559			100							
560			336	324						
561			324	336	290					
562			336	324						
563			324							
564			324							
565			324							
566			324							
567			114	400						
568			114	400						
569			406	400	114					
570			324							
571			324							
572			324							
573			324							
574			324							
575			324							
576			324							
577			324							
578			324							
579			324							
580			324							
581			324							
582			324							
583			324							
584			324							
585			324							

	A	B	C	D
586	MI0002790	GRAND RAPIDS	6391249	1042
587	MI0002790	GRAND RAPIDS	6391249	1043
588	MI0002790	GRAND RAPIDS	6391249	1044
589	MI0002790	GRAND RAPIDS	6391249	1045
590	MI0002790	GRAND RAPIDS	6391249	1046
591	MI0002790	GRAND RAPIDS	6391249	1047
592	MI0002790	GRAND RAPIDS	6391249	1048
593	MI0002790	GRAND RAPIDS	6391249	1049
594	MI0002790	GRAND RAPIDS	6391249	1050
595	MI0002790	GRAND RAPIDS	6391249	1051
596	MI0002790	GRAND RAPIDS	6391249	1052
597	MI0002790	GRAND RAPIDS	6391249	1053
598	MI0002790	GRAND RAPIDS	6391249	1054
599	MI0002790	GRAND RAPIDS	6391249	1055
600	MI0002790	GRAND RAPIDS	6391249	1056
601	MI0002790	GRAND RAPIDS	6391249	1057
602	MI0002790	GRAND RAPIDS	6391249	1058
603	MI0002790	GRAND RAPIDS	6391249	1059
604	MI0002790	GRAND RAPIDS	6391249	1060
605	MI0002790	GRAND RAPIDS	6391249	1061
606	MI0002790	GRAND RAPIDS	6391249	1062
607	MI0002790	GRAND RAPIDS	6391249	1063
608	MI0002790	GRAND RAPIDS	6391249	1064
609	MI0002790	GRAND RAPIDS	6391249	1065
610	MI0002790	GRAND RAPIDS	6391249	1066
611	MI0002790	GRAND RAPIDS	6391249	1067
612	MI0002790	GRAND RAPIDS	6391249	1068
613	MI0002790	GRAND RAPIDS	6391249	1069
614	MI0002790	GRAND RAPIDS	6391249	1070
615	MI0002790	GRAND RAPIDS	6391249	1071
616	MI0002790	GRAND RAPIDS	6391249	1072
617	MI0002790	GRAND RAPIDS	6391249	1073
618	MI0002790	GRAND RAPIDS	6391249	1076
619	MI0002790	GRAND RAPIDS	6391249	1077
620	MI0002790	GRAND RAPIDS	6391249	1079
621	MI0002790	GRAND RAPIDS	6391249	1081
622	MI0002790	GRAND RAPIDS	6391249	1082
623	MI0002790	GRAND RAPIDS	6391249	1085
624	MI0002790	GRAND RAPIDS	6391249	1086
625	MI0002790	GRAND RAPIDS	6391249	1087
626	MI0002790	GRAND RAPIDS	6391249	2000
627	MI0002790	GRAND RAPIDS	6391249	2001





[illegible]

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
586			324							
587			324							
588			324							
589			324							
590			324							
591			324							
592			324							
593			324							
594			324							
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596			324							
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598			324							
599			324							
600			324							
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606			324							
607			324							
608			324							
609			324							
610			324							
611			324							
612			324							
613			324							
614			612	262	336					
615			336	612	262					
616			262	336	612					
617			612	336	262					
618			336	262	612					
619			262	336	612					
620			612	262	336					
621			612	262	336	328	322			
622			254	326						
623			262	612	336					
624			262	326	336	612				
625			324							
626			262	336	612					
627			612	262	336					

	A	B	C	D
628	MI0002790	GRAND RAPIDS	6391249	2002
629	MI0002790	GRAND RAPIDS	6391249	2003
630	MI0002790	GRAND RAPIDS	6391249	2004
631	MI0002790	GRAND RAPIDS	6391249	2005
632	MI0002790	GRAND RAPIDS	6391249	2006
633	MI0002790	GRAND RAPIDS	6391249	2007
634	MI0002790	GRAND RAPIDS	6391249	2008
635	MI0002790	GRAND RAPIDS	6391249	2009
636	MI0002790	GRAND RAPIDS	6391249	2012
637	MI0002790	GRAND RAPIDS	6391249	2013
638	MI0002790	GRAND RAPIDS	6391249	2014
639	MI0002790	GRAND RAPIDS	6391249	3000
640	MI0002790	GRAND RAPIDS	6391249	3001
641	MI0002790	GRAND RAPIDS	6391249	3002
642	MI0002790	GRAND RAPIDS	6391249	3003
643	MI0002790	GRAND RAPIDS	6391249	3004
644	MI0002790	GRAND RAPIDS	6391249	3005
645	MI0002790	GRAND RAPIDS	6391249	3006
646	MI0002790	GRAND RAPIDS	6391249	3007
647	MI0002790	GRAND RAPIDS	6391249	3008
648	MI0002790	GRAND RAPIDS	6391249	3009
649	MI0002790	GRAND RAPIDS	6391249	3010
650	MI0002790	GRAND RAPIDS	6391249	3011
651	MI0002790	GRAND RAPIDS	6391249	3012
652	MI0002790	GRAND RAPIDS	6391249	3013
653	MI0002790	GRAND RAPIDS	6391249	3014
654	MI0002790	GRAND RAPIDS	6391249	3015
655	MI0002790	GRAND RAPIDS	6391249	3016
656	MI0002790	GRAND RAPIDS	6391249	3017
657	MI0002790	GRAND RAPIDS	6391249	3018
658	MI0002790	GRAND RAPIDS	6391249	3019
659	MI0002900	GROSSE POINTE PARK	179520	1000
660	MI0002900	GROSSE POINTE PARK	179520	1001
661	MI0002900	GROSSE POINTE PARK	179520	1002
662	MI0002900	GROSSE POINTE PARK	179520	2000
663	MI0002900	GROSSE POINTE PARK	179520	3000
664	MI0002900	GROSSE POINTE PARK	179520	3001
665	MI0002960	HAMPTON TOWNSHIP	457987	1000
666	MI0002960	HAMPTON TOWNSHIP	457987	1001
667	MI0002960	HAMPTON TOWNSHIP	457987	2004
668	MI0002960	HAMPTON TOWNSHIP	457987	3003
669	MI0002960	HAMPTON TOWNSHIP	457987	3004



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
628																		
629			R	F	2B						6	88884			1/1/1900 0:00	8	6	
630			R	F	2B						8	163158			1/1/1900 0:00	6	8	
631			R	F	2B						10	308			1/1/1900 0:00	6	8	
632			R	F	2B						12	121552			1/1/1900 0:00	8	6	
633			H	F	2B						46	132000			1/1/1900 0:00	20		
634			H	F	2B						60	132000			1/1/1900 0:00	20		
635																		
636			N	F	2B						16	11350		3230620	10/1/2010 0:00	1		
637			N	C	2B					1	16	3360	2	1722000	10/1/2010 0:00	1		
638			N	F	2B						16	8250		1690000	10/1/2010 0:00	1		
639			R	F	1D						1		17580		1/1/1900 0:00	1	20	
640			R	F	4A						48		2	100000	12/1/2006 0:00	20		
641			R	F							0.75		67141		1/1/1900 0:00	8	20	
642			R	F							1		4159		1/1/1900 0:00	20	8	
643			R	F							1.5		1957		1/1/1900 0:00	8	20	
644			R	F							2		1260		1/1/1900 0:00	8	20	
645			R	F							3		133		1/1/1900 0:00	20	8	
646			R	F							4		106		1/1/1900 0:00	20	8	
647			R	F							6		22		1/1/1900 0:00	8	20	
648			R	F	2B						0.75		51		1/1/1900 0:00	8	20	
649			R	F	2B						1		34		1/1/1900 0:00	8	20	
650			R	F	2B						1.25		8		1/1/1900 0:00	20	8	
651			R	F	2B						1.5		23		1/1/1900 0:00	20	8	
652			R	F	2B						2		80		1/1/1900 0:00	8	20	
653			R	F	2B						2.5		7		1/1/1900 0:00	20	8	
654			R	F	2B						3		17		1/1/1900 0:00	20	8	
655			R	F	2B						4		17		1/1/1900 0:00	8	20	
656			R	F	2B						6		10		1/1/1900 0:00	20	8	
657			R	F	2B						8		6		1/1/1900 0:00	20	8	
658			R	F	2B						10		3		1/1/1900 0:00	8		
659			N	F	2B	1A				5.85			1		1/1/1900 0:00	2	10	
660			N	F	2B	1A				3.9			1		1/1/1900 0:00	10	2	
661			N	F	2B					900			1		1/1/1900 0:00	2	10	
662			R	C	4A						8	17952			1/1/1900 0:00	6	10	
663			R	F	4A						0.75		4009		1/1/1900 0:00	10	6	
664			R	C	1D								2004		1/1/1900 0:00	6	10	
665			H	F	4A					1			1	178625	2/1/2002 0:00	10	9	
666			H	F	4A					0.25			1	94650	2/1/2001 0:00	9	10	
667			R	F	4A						8	45789			1/1/1900 0:00	10		
668			R	F	4A						0.625		2977		1/1/1900 0:00	10	11	
669			R	F	4A						0.75		239		1/1/1900 0:00	11	10	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
628			262	612	336					
629			190							
630			190							
631			190							
632			190							
633			100							
634			100							
635			262	612	100					
636			100							
637			114	400						
638			100							
639			100							
640			100							
641			324							
642			324							
643			324							
644			324							
645			324							
646			324							
647			324							
648			324							
649			324							
650			324							
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652			324							
653			324							
654			324							
655			324							
656			324							
657			324							
658			324							
659			100							
660			100							
661			100							
662			100							
663			328							
664			100							
665			338	336	324					
666			338	336	324					
667			100							
668			100							
669			100							

	A	B	C	D
670	MI0002960	HAMPTON TOWNSHIP	457987	3005
671	MI0002960	HAMPTON TOWNSHIP	457987	3006
672	MI0002960	HAMPTON TOWNSHIP	457987	3007
673	MI0002960	HAMPTON TOWNSHIP	457987	3008
674	MI0002960	HAMPTON TOWNSHIP	457987	3009
675	MI0002960	HAMPTON TOWNSHIP	457987	3010
676	MI0002960	HAMPTON TOWNSHIP	457987	3011
677	MI0003317	HURON REGIONAL WATER AUTHORITY	6600	1003
678	MI0003317	HURON REGIONAL WATER AUTHORITY	6600	1005
679	MI0003317	HURON REGIONAL WATER AUTHORITY	6600	1007
680	MI0003317	HURON REGIONAL WATER AUTHORITY	6600	3000
681	MI0003317	HURON REGIONAL WATER AUTHORITY	6600	3001
682	MI0003370	IONIA	342807	1000
683	MI0003370	IONIA	342807	1001
684	MI0003370	IONIA	342807	1002
685	MI0003370	IONIA	342807	1003
686	MI0003370	IONIA	342807	1004
687	MI0003370	IONIA	342807	1005
688	MI0003370	IONIA	342807	1006
689	MI0003370	IONIA	342807	1007
690	MI0003370	IONIA	342807	1008
691	MI0003370	IONIA	342807	1009
692	MI0003370	IONIA	342807	1010
693	MI0003370	IONIA	342807	1011
694	MI0003370	IONIA	342807	1012
695	MI0003370	IONIA	342807	1013
696	MI0003370	IONIA	342807	1014
697	MI0003370	IONIA	342807	1015
698	MI0003370	IONIA	342807	1016
699	MI0003370	IONIA	342807	1017
700	MI0003370	IONIA	342807	1018
701	MI0003370	IONIA	342807	1019
702	MI0003370	IONIA	342807	1020
703	MI0003370	IONIA	342807	1021
704	MI0003370	IONIA	342807	1022
705	MI0003370	IONIA	342807	1023
706	MI0003370	IONIA	342807	1024
707	MI0003370	IONIA	342807	1025
708	MI0003370	IONIA	342807	1026
709	MI0003370	IONIA	342807	1027
710	MI0003370	IONIA	342807	1028
711	MI0003370	IONIA	342807	1029





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
670			R	F	4A						1		124		1/1/1900 0:00	10	11	
671			R	F	4A						1.5		59		1/1/1900 0:00	10	11	
672			R	F	4A						2		40		1/1/1900 0:00	11	10	
673			R	F	4A						3		7		1/1/1900 0:00	10	11	
674			R	F	4A						4		5		1/1/1900 0:00	10	11	
675			R	F	4A						6		5		1/1/1900 0:00	10	11	
676			R	F	1D						1		18		1/1/1900 0:00	10	11	
677			H	F	4A					2.16			1		1/1/1900 0:00	10		
678			R	F	4A								1		1/1/1900 0:00	10		
679			R	F	4A					800			1		1/1/1900 0:00	10		
680			R	F	4A						20		1		1/1/1900 0:00	10	11	
681			R	F	4A						10		1		1/1/1900 0:00	10	11	
682			H	C	2B					1.044			1		1/1/1900 0:00	8	10	6
683			H	F	2B					1.008			3		1/1/1900 0:00	8	6	10
684			H	C	2B					0.929			1		1/1/1900 0:00	6	8	10
685			R	F	2B					0.864			1		1/1/1900 0:00	8	10	6
686			H	F	2B					0.864			1		1/1/1900 0:00	10	6	8
687			H	F	2B					1.224			1		1/1/1900 0:00	6	10	8
688			H	F	2B					1.44			1		1/1/1900 0:00	10	6	8
689																		
690																		
691			R															
692																		
693																		
694																		
695																		
696																		
697																		
698			R	F	2A					1.044			1		1/1/1900 0:00	10	6	8
699			R	F	4A					1.044			1		1/1/1900 0:00	10	6	
700																		
701			R	F	2A					1.008			2		1/1/1900 0:00	10	6	8
702			R	F	4A					1.008			3		1/1/1900 0:00	10	6	
703																		
704			R	F	4A					0.929			1		1/1/1900 0:00	6	10	
705			R	F	2A					0.864			2		1/1/1900 0:00	6	10	
706			R	F	4A					0.864			2		1/1/1900 0:00	10	6	
707			R	F	2A					1.224			1		1/1/1900 0:00	10	6	
708			R	F	4A					1.224			1		1/1/1900 0:00	6	10	
709																		
710																		
711																		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
670			100							
671			100							
672			100							
673			100							
674			100							
675			100							
676			330							
677			404	298						
678			100							
679			100							
680			100							
681			100							
682			100							
683			100							
684			100							
685			100							
686			100							
687			100							
688			100							
689			114							
690			262							
691			262							
692			262							
693			262							
694			262							
695			262							
696			262							
697			114							
698			334							
699			100							
700			212							
701			334							
702			100							
703			212							
704			100							
705			334							
706			100							
707			334							
708			100							
709			114							
710			114							
711			114							

	A	B	C	D
712	MI0003370	IONIA	342807	1030
713	MI0003370	IONIA	342807	1031
714	MI0003370	IONIA	342807	1032
715	MI0003370	IONIA	342807	1033
716	MI0003370	IONIA	342807	1034
717	MI0003370	IONIA	342807	1035
718	MI0003370	IONIA	342807	1036
719	MI0003370	IONIA	342807	2000
720	MI0003370	IONIA	342807	2001
721	MI0003370	IONIA	342807	2002
722	MI0003370	IONIA	342807	2003
723	MI0003370	IONIA	342807	2004
724	MI0003370	IONIA	342807	2005
725	MI0003370	IONIA	342807	2006
726	MI0003370	IONIA	342807	2007
727	MI0003370	IONIA	342807	2008
728	MI0003370	IONIA	342807	3000
729	MI0003370	IONIA	342807	3001
730	MI0003370	IONIA	342807	3002
731	MI0003370	IONIA	342807	3003
732	MI0003370	IONIA	342807	3004
733	MI0003370	IONIA	342807	3005
734	MI0003370	IONIA	342807	3006
735	MI0003370	IONIA	342807	3007
736	MI0003370	IONIA	342807	3008
737	MI0003370	IONIA	342807	3009
738	MI0003370	IONIA	342807	3010
739	MI0003370	IONIA	342807	3011
740	MI0003520	KALAMAZOO	4289683	1000
741	MI0003520	KALAMAZOO	4289683	1001
742	MI0003520	KALAMAZOO	4289683	1002
743	MI0003520	KALAMAZOO	4289683	1003
744	MI0003520	KALAMAZOO	4289683	1004
745	MI0003520	KALAMAZOO	4289683	1005
746	MI0003520	KALAMAZOO	4289683	1006
747	MI0003520	KALAMAZOO	4289683	1007
748	MI0003520	KALAMAZOO	4289683	1008
749	MI0003520	KALAMAZOO	4289683	1009
750	MI0003520	KALAMAZOO	4289683	1010
751	MI0003520	KALAMAZOO	4289683	1011
752	MI0003520	KALAMAZOO	4289683	1012
753	MI0003520	KALAMAZOO	4289683	1013



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
712																		
713																		
714			H	F	2B					0.5			3		1/1/1900 0:00	6	10	
715			H	F	2B					1			1		1/1/1900 0:00	10	6	
716			H	F	2B					0.5			1		1/1/1900 0:00	10	6	
717			R	C	2B					1.728			1		1/1/1900 0:00	10	6	
718			H	F	2B					2.189			1		1/1/1900 0:00	10	6	
719			R	F	2B						8	21500			1/1/1900 0:00	10		
720			N	F	2B						12	950		152000	6/1/2007 0:00	10	1	
721			N	F	2B						12	1800		288000	6/1/2007 0:00	10	1	
722			N	F	2B						12	950		152000	6/1/2007 0:00	1	10	
723			N	F	2B						16	4500		900000	6/1/2007 0:00	1	10	
724			R	F	2B						8	1500			1/1/1900 0:00	10	1	
725			R	F	2B						8	2000			1/1/1900 0:00	10	1	
726			R	F	2B						8	1440			1/1/1900 0:00	1	10	
727			N	F	2B						12	600		96000	6/1/2007 0:00	10	1	
728			R	C							0.75		3346		1/1/1900 0:00	10		
729			R	F	2B						180		1		1/1/1900 0:00	6	10	
730			R	F	2B						155		1		1/1/1900 0:00	6	10	
731			R	F	2B						150		1		1/1/1900 0:00	6	10	
732			R	F	2B						125		1		1/1/1900 0:00	10	6	
733																		
734			R	F	2B						50		1		1/1/1900 0:00	6	10	
735			R	F							10		1		1/1/1900 0:00	10	6	
736			R	F							12		2		1/1/1900 0:00	10	6	
737			R	F							16		3		1/1/1900 0:00	10	6	
738			R	F	2B	1H	1B						1		1/1/1900 0:00	10		
739			R	F	2B								1		1/1/1900 0:00	10		
740																		
741			N	C	4A					2			1	3440500	11/1/2010 0:00	20	1	2
742			N	C	4A					3			1	5460000	11/1/2010 0:00	20	1	
743			R	C	4A									157000	11/1/2010 0:00	1	20	
744			H	C	4A									900000	2/1/2007 0:00	10	1	
745			N	C	4A									1590600	11/1/2010 0:00	1	10	20
746			R	C	4A									360000	11/1/2010 0:00	1	11	20
747			N	F	2A					7			1	7852900	11/1/2010 0:00	2	20	1
748			N	C	2A					3			1	3121000	11/1/2010 0:00	1	20	2
749																		
750			N	C	2A					3.8			1	5683700	11/1/2010 0:00	2	20	1
751			N	C	2A					1.7			1	3051700	11/1/2010 0:00	20	1	2
752			R	F	4A					0.5			1	1300000	11/1/2010 0:00	2	20	1
753			H	F	4A					7					1/1/1900 0:00	11	1	20

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
712			114							
713			114							
714			100							
715			100							
716			244							
717			100							
718			100							
719			100							
720			100							
721			100							
722			100							
723			272							
724			308	120						
725			308	120						
726			120	308						
727			280							
728			100							
729			100							
730			100							
731			100							
732			100							
733			114							
734			100							
735			100							
736			100							
737			100							
738			304							
739			100							
740			122							
741			100							
742			338							
743			338	326	336					
744			326							
745	11		324							
746			338	336						
747			326	328						
748			326							
749			228							
750			326							
751			326							
752			100							
753			308							

	A	B	C	D
754	MI0003520	KALAMAZOO	4289683	1014
755	MI0003520	KALAMAZOO	4289683	1015
756	MI0003520	KALAMAZOO	4289683	1016
757	MI0003520	KALAMAZOO	4289683	1017
758	MI0003520	KALAMAZOO	4289683	1018
759	MI0003520	KALAMAZOO	4289683	1019
760	MI0003520	KALAMAZOO	4289683	1020
761	MI0003520	KALAMAZOO	4289683	1021
762	MI0003520	KALAMAZOO	4289683	1022
763	MI0003520	KALAMAZOO	4289683	1023
764	MI0003520	KALAMAZOO	4289683	1024
765	MI0003520	KALAMAZOO	4289683	1025
766	MI0003520	KALAMAZOO	4289683	1026
767	MI0003520	KALAMAZOO	4289683	1027
768	MI0003520	KALAMAZOO	4289683	1028
769	MI0003520	KALAMAZOO	4289683	2000
770	MI0003520	KALAMAZOO	4289683	2001
771	MI0003520	KALAMAZOO	4289683	2002
772	MI0003520	KALAMAZOO	4289683	2003
773	MI0003520	KALAMAZOO	4289683	2004
774	MI0003520	KALAMAZOO	4289683	2005
775	MI0003520	KALAMAZOO	4289683	2006
776	MI0003520	KALAMAZOO	4289683	2007
777	MI0003520	KALAMAZOO	4289683	2008
778	MI0003520	KALAMAZOO	4289683	2009
779	MI0003520	KALAMAZOO	4289683	3000
780	MI0003520	KALAMAZOO	4289683	3001
781	MI0003520	KALAMAZOO	4289683	3002
782	MI0003520	KALAMAZOO	4289683	3003
783	MI0003520	KALAMAZOO	4289683	3004
784	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1000
785	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1001
786	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1002
787	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1003
788	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1004
789	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1005
790	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1006
791	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1007
792	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1008
793	MI0003630	KINROSS CHARTER TOWNSHIP	147840	1009
794	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2000
795	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2001





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	
754			H	F	4A					1.5				1	458200	11/1/2010 0:00	20	1	11
755			H	F	4A					0.35				1	359600	11/1/2010 0:00	11	20	1
756			H	F	4A					0.75				1	359600	11/1/2010 0:00	11	20	1
757			H	F	4A					1.5				1	458200	11/1/2010 0:00	1	11	20
758			H	F	4A					1						1/1/1900 0:00	20	1	11
759																			
760			H	C	4A									3076500	11/1/2010 0:00	4	11	1	
761																			
762																			
763			H	F	4A					2.5			1		1/1/1900 0:00	10			
764																			
765																			
766																			
767																			
768																			
769																			
770																			
771																			
772		N	C		4A						16	15930		1400000	11/1/2010 0:00	10	1	11	
773		R	C		4A						8	428968			1/1/1900 0:00	11			
774																			
775																			
776																			
777																			
778																			
779		R	C		4A								2760		1/1/1900 0:00	10			
780																			
781		R	C		4A						0.625		42324		1/1/1900 0:00	1	11	10	
782		R	C		1D								14720		1/1/1900 0:00	11	1		
783																			
784		R	F		4A					1.4			2		1/1/1900 0:00	11			
785		R	F		4A					1			1		1/1/1900 0:00	11			
786		R	F		4A					0.72			2		1/1/1900 0:00	11			
787		H	F		4A					0.25			1	206000	1/1/2011 0:00	4			
788		H	C		4A					0.5			1	49000	1/1/2011 0:00	4			
789		R	F		4A					250			1		1/1/1900 0:00	11			
790		R	F		4A					100			1		1/1/1900 0:00	11			
791		N	F		4A								1		1/1/1900 0:00	11			
792		H	F		4A					1.4			1		1/1/1900 0:00	11			
793		H	F		4A					0.72			2		1/1/1900 0:00	11			
794		R	F		4A						12	1056			1/1/1900 0:00	11			
795		R	C		4A						6	1056			1/1/1900 0:00	11			

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
754			100							
755			100							
756			338							
757			100							
758			308							
759			228							
760			324	328	348	336	338			
761			228							
762			228							
763			100							
764			228	250						
765			228	250						
766			250	228						
767			200							
768			212							
769			228	216						
770			216	228						
771			216	228						
772			324							
773			244							
774			228	212						
775			212	228						
776			228	212						
777			216							
778			216							
779			218	324	340					
780			262							
781			342	308						
782			308							
783			262							
784			328	320	326					
785			326	328	320					
786			328	320	326					
787			200	400						
788			200	400						
789			100							
790			100							
791			200	400						
792			100							
793			100							
794			100							
795			100							

	A	B	C	D
796	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2002
797	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2003
798	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2004
799	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2005
800	MI0003630	KINROSS CHARTER TOWNSHIP	147840	2006
801	MI0003630	KINROSS CHARTER TOWNSHIP	147840	3000
802	MI0003630	KINROSS CHARTER TOWNSHIP	147840	3001
803	MI0003630	KINROSS CHARTER TOWNSHIP	147840	3002
804	MI0003630	KINROSS CHARTER TOWNSHIP	147840	3003
805	MI0003630	KINROSS CHARTER TOWNSHIP	147840	3004
806	MI0003630	KINROSS CHARTER TOWNSHIP	147840	3005
807	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1000
808	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1001
809	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1003
810	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1004
811	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1005
812	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1006
813	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1007
814	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1008
815	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1009
816	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1010
817	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1011
818	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1013
819	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1014
820	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1015
821	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1016
822	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1017
823	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1018
824	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1019
825	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1020
826	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1021
827	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1022
828	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	1023
829	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2000
830	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2001
831	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2002
832	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2003
833	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2004
834	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2005
835	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2006
836	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2007
837	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2008



[illegible]

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
796			100							
797			100							
798			100							
799			100							
800			100							
801			340							
802			100							
803			100							
804			100							
805			100							
806			308							
807			100							
808			100							
809			244							
810			326	328	308					
811			212							
812			100							
813			100							
814			340							
815			212							
816			326	328						
817			212							
818			244	340						
819			244	300						
820			262							
821			322	328						
822			266	212						
823			216							
824			308							
825			254							
826			308							
827			336							
828			212							
829			100							
830			100							
831			100							
832			100							
833			284							
834			284							
835			284	266						
836			284	266						
837			266	284						

	A	B	C	D
838	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2009
839	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2010
840	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2011
841	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2012
842	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2013
843	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2014
844	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2015
845	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2016
846	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2017
847	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	2018
848	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3000
849	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3001
850	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3002
851	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3003
852	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3004
853	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3005
854	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3006
855	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3007
856	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3008
857	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3009
858	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3010
859	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3011
860	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3012
861	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3013
862	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3014
863	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3015
864	MI0003760	LANSING BOARD OF WATER AND LIGHT	4477609	3016
865	MI0003990	MACOMB TOWNSHIP	1304160	2000
866	MI0003990	MACOMB TOWNSHIP	1304160	2001
867	MI0003990	MACOMB TOWNSHIP	1304160	2002
868	MI0003990	MACOMB TOWNSHIP	1304160	2003
869	MI0003990	MACOMB TOWNSHIP	1304160	2004
870	MI0003990	MACOMB TOWNSHIP	1304160	2005
871	MI0003990	MACOMB TOWNSHIP	1304160	2006
872	MI0003990	MACOMB TOWNSHIP	1304160	2007
873	MI0003990	MACOMB TOWNSHIP	1304160	2008
874	MI0003990	MACOMB TOWNSHIP	1304160	2009
875	MI0003990	MACOMB TOWNSHIP	1304160	2010
876	MI0003990	MACOMB TOWNSHIP	1304160	2011
877	MI0003990	MACOMB TOWNSHIP	1304160	3000
878	MI0004006	MADISON TOWNSHIP	278520	1000
879	MI0004006	MADISON TOWNSHIP	278520	1001





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
838																		
839																		
840																		
841																		
842																		
843																		
844																		
845																		
846																		
847																		
848		R	C	1D							1		3200		1/1/1900 0:00	11		
849		R	F	4A							1		350		1/1/1900 0:00	11		
850		R	C	4A							0.625		41524		1/1/1900 0:00	11		
851		R	C	4A							0.75		7168		1/1/1900 0:00	11		
852		R	C	4A							1		1500		1/1/1900 0:00	11		
853		R	C	4A							1.5		908		1/1/1900 0:00	11		
854		R	C	4A							2		983		1/1/1900 0:00	11		
855		R	C	4A							3		97		1/1/1900 0:00	11		
856		R	C	4A							4		126		1/1/1900 0:00	11		
857		R	C	4A							6		29		1/1/1900 0:00	11		
858		R	C	4A							8		3		1/1/1900 0:00	11		
859		R	C	4A							10		8		1/1/1900 0:00	11		
860		R	C	4A							16		1		1/1/1900 0:00	11		
861		R	C								16		4		1/1/1900 0:00	11		
862		R	C								16		4		1/1/1900 0:00	11		
863		H	C								30		1		1/1/1900 0:00	11		
864		H	C								30		1		1/1/1900 0:00	11		
865																		
866																		
867		R	F	4A							16	10700			1/1/1900 0:00	1		
868		R	F	4A							8	18400			1/1/1900 0:00	1	10	
869																		
870																		
871																		
872		R	C	4A							16	7680			1/1/1900 0:00	10	1	
873		R	C	4A							16	5500			1/1/1900 0:00	10	1	
874																		
875		R	C	4A							16	14700			1/1/1900 0:00	1	10	
876		R	F	4A							6	73436			1/1/1900 0:00	10		
877		R	F	4A							1		25338		1/1/1900 0:00	10		
878		R	F	4A						0.99			2		1/1/1900 0:00	10	8	
879		R	F	4A						0.3			1		1/1/1900 0:00	8	10	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
838			212	188						
839			212							
840			212							
841			212							
842			212							
843			212							
844			212							
845			212							
846			212							
847			212							
848			334	340						
849			100							
850			340							
851			340							
852			340							
853			340							
854			340							
855			340							
856			100							
857			340							
858			100							
859			340							
860			100							
861			280							
862			280							
863			280							
864			280							
865			216							
866			216							
867			308							
868			100							
869			216							
870			216							
871			216							
872			100							
873			100							
874			216							
875			100							
876			344							
877			100							
878			282	244	402					
879			402	244						

	A	B	C	D
880	MI0004006	MADISON TOWNSHIP	278520	1002
881	MI0004006	MADISON TOWNSHIP	278520	1003
882	MI0004006	MADISON TOWNSHIP	278520	1004
883	MI0004006	MADISON TOWNSHIP	278520	1005
884	MI0004006	MADISON TOWNSHIP	278520	2000
885	MI0004006	MADISON TOWNSHIP	278520	3000
886	MI0004006	MADISON TOWNSHIP	278520	3001
887	MI0004120	MARQUETTE	0	1000
888	MI0004120	MARQUETTE	0	1002
889	MI0004120	MARQUETTE	0	1003
890	MI0004120	MARQUETTE	0	1004
891	MI0004120	MARQUETTE	0	1005
892	MI0004120	MARQUETTE	0	1006
893	MI0004120	MARQUETTE	0	1008
894	MI0004120	MARQUETTE	0	1009
895	MI0004120	MARQUETTE	0	1010
896	MI0004120	MARQUETTE	0	2000
897	MI0004120	MARQUETTE	0	3000
898	MI0004120	MARQUETTE	0	3001
899	MI0004120	MARQUETTE	0	3002
900	MI0004120	MARQUETTE	0	3003
901	MI0004120	MARQUETTE	0	3004
902	MI0004120	MARQUETTE	0	3005
903	MI0004120	MARQUETTE	0	3006
904	MI0004120	MARQUETTE	0	3007
905	MI0004120	MARQUETTE	0	3008
906	MI0004120	MARQUETTE	0	3009
907	MI0004120	MARQUETTE	0	3010
908	MI0004370	MIDLAND, CITY OF	1996157	1000
909	MI0004370	MIDLAND, CITY OF	1996157	1001
910	MI0004370	MIDLAND, CITY OF	1996157	1002
911	MI0004370	MIDLAND, CITY OF	1996157	1003
912	MI0004370	MIDLAND, CITY OF	1996157	1004
913	MI0004370	MIDLAND, CITY OF	1996157	1005
914	MI0004370	MIDLAND, CITY OF	1996157	1006
915	MI0004370	MIDLAND, CITY OF	1996157	1007
916	MI0004370	MIDLAND, CITY OF	1996157	1008
917	MI0004370	MIDLAND, CITY OF	1996157	1009
918	MI0004370	MIDLAND, CITY OF	1996157	1010
919	MI0004370	MIDLAND, CITY OF	1996157	2000
920	MI0004370	MIDLAND, CITY OF	1996157	3000
921	MI0004370	MIDLAND, CITY OF	1996157	3001



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
880			H	F	4A					1			1		1/1/1900 0:00	10		
881			H	F	4A					0.25			1		1/1/1900 0:00	8	10	
882			R	F	4A					125			1		1/1/1900 0:00	10		
883			H	F	4A					0.3			1		1/1/1900 0:00	8	10	
884																		
885			R	F	4A						1		870		1/1/1900 0:00	10		
886			R	F	4A						2		290		1/1/1900 0:00	10		
887			H	C						7			1		1/1/1900 0:00	5	4	
888			H	F						1			1	430600	3/1/2009 0:00	8	4	
889			H	F						1			1	430600	3/1/2009 0:00	8	4	
890																		
891																		
892																		
893																		
894																		
895																		
896		R	C											43173500	3/1/2009 0:00	5	4	8
897																		
898																		
899																		
900																		
901																		
902																		
903																		
904																		
905																		
906																		
907																		
908		H	F	1A						48			1		1/1/1900 0:00	20	10	6
909		H	F	1A						7.5			1		1/1/1900 0:00	6	10	
910		H	F	1A						7.7			1		1/1/1900 0:00	6	10	20
911		H	F	1A						1.66			1		1/1/1900 0:00	10	6	
912		H	F	1A						0.25			1		1/1/1900 0:00	10	6	
913		H	F	1A						0.5			1		1/1/1900 0:00	6	10	
914		H	F	1A						1			1		1/1/1900 0:00	6	10	
915		N	C	2B						1600			1		1/1/1900 0:00	20	1	10
916																		
917		H	C	2B						3.66			1	60000	12/1/2006 0:00	20		
918																		
919		R	F	4A							8	199584			1/1/1900 0:00	10		
920		R	F	4A							0.75		9354		1/1/1900 0:00	10		
921		R	F	4A							1		7397		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
880			324							
881			100							
882			100							
883			280							
884			180							
885			100							
886			100							
887			324							
888			324							
889			324							
890			204							
891			200							
892			204							
893			204							
894			200							
895			200							
896			324	124						
897			200							
898			200							
899			200							
900			200							
901			200							
902			200							
903			200							
904			200							
905			200							
906			200							
907			200							
908			334							
909			400	262						
910			334							
911			334							
912			334							
913			334							
914			334							
915			404	302	400	200				
916			262	500						
917			322							
918			412	262						
919			100							
920			100							
921			100							

	A	B	C	D
922	MI0004370	MIDLAND, CITY OF	1996157	3002
923	MI0004370	MIDLAND, CITY OF	1996157	3003
924	MI0004370	MIDLAND, CITY OF	1996157	3004
925	MI0004370	MIDLAND, CITY OF	1996157	3005
926	MI0004370	MIDLAND, CITY OF	1996157	3006
927	MI0004370	MIDLAND, CITY OF	1996157	3007
928	MI0004370	MIDLAND, CITY OF	1996157	3008
929	MI0004370	MIDLAND, CITY OF	1996157	3009
930	MI0004455	MONROE SOUTH COUNTY	1150000	1000
931	MI0004455	MONROE SOUTH COUNTY	1150000	1001
932	MI0004455	MONROE SOUTH COUNTY	1150000	1002
933	MI0004455	MONROE SOUTH COUNTY	1150000	1003
934	MI0004455	MONROE SOUTH COUNTY	1150000	1004
935	MI0004455	MONROE SOUTH COUNTY	1150000	1005
936	MI0004455	MONROE SOUTH COUNTY	1150000	1006
937	MI0004455	MONROE SOUTH COUNTY	1150000	1007
938	MI0004455	MONROE SOUTH COUNTY	1150000	2000
939	MI0004455	MONROE SOUTH COUNTY	1150000	2001
940	MI0004455	MONROE SOUTH COUNTY	1150000	2002
941	MI0004455	MONROE SOUTH COUNTY	1150000	3000
942	MI0004455	MONROE SOUTH COUNTY	1150000	3001
943	MI0004455	MONROE SOUTH COUNTY	1150000	3002
944	MI0004510	MOUNT CLEMENS, CITY OF	379017	1000
945	MI0004510	MOUNT CLEMENS, CITY OF	379017	1002
946	MI0004510	MOUNT CLEMENS, CITY OF	379017	1003
947	MI0004510	MOUNT CLEMENS, CITY OF	379017	1004
948	MI0004510	MOUNT CLEMENS, CITY OF	379017	1005
949	MI0004510	MOUNT CLEMENS, CITY OF	379017	2000
950	MI0004510	MOUNT CLEMENS, CITY OF	379017	2001
951	MI0004510	MOUNT CLEMENS, CITY OF	379017	2002
952	MI0004510	MOUNT CLEMENS, CITY OF	379017	2003
953	MI0004510	MOUNT CLEMENS, CITY OF	379017	2004
954	MI0004510	MOUNT CLEMENS, CITY OF	379017	2005
955	MI0004510	MOUNT CLEMENS, CITY OF	379017	2006
956	MI0004510	MOUNT CLEMENS, CITY OF	379017	2007
957	MI0004510	MOUNT CLEMENS, CITY OF	379017	2009
958	MI0004510	MOUNT CLEMENS, CITY OF	379017	2010
959	MI0004510	MOUNT CLEMENS, CITY OF	379017	2011
960	MI0004510	MOUNT CLEMENS, CITY OF	379017	2012
961	MI0004510	MOUNT CLEMENS, CITY OF	379017	2013
962	MI0004510	MOUNT CLEMENS, CITY OF	379017	2014
963	MI0004510	MOUNT CLEMENS, CITY OF	379017	2015





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
922			R	F	4A						1.5		302		1/1/1900 0:00	10		
923			R	F	4A						2		464		1/1/1900 0:00	10		
924			R	F	4A						3		68		1/1/1900 0:00	10		
925			R	F	4A						4		10		1/1/1900 0:00	10		
926			R	F	4A						6		12		1/1/1900 0:00	10		
927			R	F	4A						8		2		1/1/1900 0:00	10		
928			R	F	4A						10		2		1/1/1900 0:00	10		
929			R	C	4A						16		2		1/1/1900 0:00	10		
930			H	C	4A					0.5			4	1032500	12/1/2010 0:00	4	10	
931			H	F	4A					11					1/1/1900 0:00	10		
932			H	F	4A					12.5					1/1/1900 0:00	10		
933			H	F	4A					2					1/1/1900 0:00	10		
934			R	F	4A					11					1/1/1900 0:00	10		
935			R	F	4A					12.5					1/1/1900 0:00	10		
936			R	F	4A					550					1/1/1900 0:00	10		
937			R	F	4A					750					1/1/1900 0:00	10		
938			R	C	4A										1/1/1900 0:00	10		
939			N	C	4A						8	115000			1/1/1900 0:00	10		
940			N	C	1B						16	12000			1/1/1900 0:00	2	10	
941			R	C	4A						0.625				2/1/2010 0:00	2	10	
942			R	F	4A								7000		1/1/1900 0:00	10		
943			R	F	4A						1		4500		1/1/1900 0:00	10		
944			R	C	2B					1000	3		246		1/1/1900 0:00	10		
945			R	C	4A								1		1/1/1900 0:00	3		
946			H	F	1A					8			1		1/1/1900 0:00	10		
947			H	F						1			1		1/1/1900 0:00	10		
948			H	F						4			1		1/1/1900 0:00	10		
949			R	C	4A						8	11520		2703151	5/1/2009 0:00	3		
950			R	C	4A						8	1300		499291	5/1/2009 0:00	3		
951			R	C	4A						8	6980		1259307	5/1/2009 0:00	3		
952																		
953			R	C	4A						6	750		80000	3/1/1998 0:00	3		
954																		
955			R	C	4A						6	1350		144000	3/1/1998 0:00	3		
956			N	C	2A						6	900		96000	3/1/1998 0:00	3		
957			R	C	4A						6	1400		150000	3/1/1998 0:00	3		
958			R	C	4A						6	350		37000	3/1/1998 0:00	3		
959			R	C	4A						6	1000		107000	3/1/1998 0:00	3		
960			R	C	4A						6	1000		107000	3/1/1998 0:00	3		
961			R	C	4A						6	400		43000	3/1/1998 0:00	3		
962			R	C	4A						6	2100		225000	3/1/1998 0:00	3		
963			R	C	4A						6	1050		112000	3/1/1998 0:00	3		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
922			100							
923			100							
924			100							
925			100							
926			100							
927			100							
928			100							
929			100							
930			100							
931			100							
932			100							
933			100							
934			100							
935			100							
936			100							
937			100							
938			100							
939			100							
940			336	224	400					
941			100							
942			100							
943			100							
944			308	328						
945			100							
946			100							
947			100							
948			100							
949			100							
950			100							
951			100							
952			502	122						
953			338							
954			122	502						
955			338							
956			338							
957			338							
958			338							
959			338							
960			338							
961			338							
962			338							
963			338							

	A	B	C	D
964	MI0004510	MOUNT CLEMENS, CITY OF	379017	2016
965	MI0004510	MOUNT CLEMENS, CITY OF	379017	2017
966	MI0004510	MOUNT CLEMENS, CITY OF	379017	2018
967	MI0004510	MOUNT CLEMENS, CITY OF	379017	2019
968	MI0004510	MOUNT CLEMENS, CITY OF	379017	2020
969	MI0004510	MOUNT CLEMENS, CITY OF	379017	2021
970	MI0004510	MOUNT CLEMENS, CITY OF	379017	2022
971	MI0004510	MOUNT CLEMENS, CITY OF	379017	2023
972	MI0004510	MOUNT CLEMENS, CITY OF	379017	3000
973	MI0004510	MOUNT CLEMENS, CITY OF	379017	3001
974	MI0004510	MOUNT CLEMENS, CITY OF	379017	3002
975	MI0004510	MOUNT CLEMENS, CITY OF	379017	3003
976	MI0004530	MOUNT PLEASANT, CITY OF	475200	1000
977	MI0004530	MOUNT PLEASANT, CITY OF	475200	1001
978	MI0004530	MOUNT PLEASANT, CITY OF	475200	1002
979	MI0004530	MOUNT PLEASANT, CITY OF	475200	1003
980	MI0004530	MOUNT PLEASANT, CITY OF	475200	1004
981	MI0004530	MOUNT PLEASANT, CITY OF	475200	1005
982	MI0004530	MOUNT PLEASANT, CITY OF	475200	1006
983	MI0004530	MOUNT PLEASANT, CITY OF	475200	1007
984	MI0004530	MOUNT PLEASANT, CITY OF	475200	1008
985	MI0004530	MOUNT PLEASANT, CITY OF	475200	2000
986	MI0004530	MOUNT PLEASANT, CITY OF	475200	2001
987	MI0004530	MOUNT PLEASANT, CITY OF	475200	2002
988	MI0004530	MOUNT PLEASANT, CITY OF	475200	2003
989	MI0004530	MOUNT PLEASANT, CITY OF	475200	2004
990	MI0004530	MOUNT PLEASANT, CITY OF	475200	3000
991	MI0004530	MOUNT PLEASANT, CITY OF	475200	3001
992	MI0004530	MOUNT PLEASANT, CITY OF	475200	3002
993	MI0004570	MUSKEGON	1033243	1000
994	MI0004570	MUSKEGON	1033243	1001
995	MI0004570	MUSKEGON	1033243	1002
996	MI0004570	MUSKEGON	1033243	1003
997	MI0004570	MUSKEGON	1033243	1004
998	MI0004570	MUSKEGON	1033243	1005
999	MI0004570	MUSKEGON	1033243	1006
1000	MI0004570	MUSKEGON	1033243	1007
1001	MI0004570	MUSKEGON	1033243	2000
1002	MI0004570	MUSKEGON	1033243	2001
1003	MI0004570	MUSKEGON	1033243	2002
1004	MI0004570	MUSKEGON	1033243	2003
1005	MI0004570	MUSKEGON	1033243	2004



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
964			R	C	4A						6	600		64000	3/1/1998 0:00	3		
965			R	C	4A						6	1050		112000	3/1/1998 0:00	3		
966			R	C	4A						6	1600		171000	3/1/1998 0:00	3		
967			N	C	2A						6	800		86000	3/1/1998 0:00	3		
968			N	C	2A						6	400		43000	3/1/1998 0:00	3		
969			N	C	2A						6	900		96000	3/1/1998 0:00	3		
970			N	C	2A						6	1000		107000	3/1/1998 0:00	3		
971			R	C							8	5450			1/1/1900 0:00	10		
972			R	C	4A						0.625		4520		1/1/1900 0:00	9		
973																		
974			R	C	1D						1		2058		1/1/1900 0:00	10		
975			R	F							0.625		1360		1/1/1900 0:00	10		
976			H	C	4A					0.5				7	280000	1/1/2012 0:00	1	
977			R	F						2.3				1	1/1/1900 0:00	20	1	
978			H	F	4A					1				1	191500	3/1/2007 0:00	4	
979			R	F	4A									1	1/1/1900 0:00	1	20	
980			H	F	1A					8.3				1	1/1/1900 0:00	10		
981			H	C	4A					0.5				1	250000	1/1/2011 0:00	1	
982			R	C	4A					120				1	1/1/1900 0:00	10		
983			R	C	4A					230				1	1/1/1900 0:00	10		
984			R	C	4A					120				1	1/1/1900 0:00	10		
985			R	C	4A						6	24024			1/1/1900 0:00	1		
986			R	C	4A						8	18480			1/1/1900 0:00	1		
987			R	C	4A						16	5016			1/1/1900 0:00	1		
988																		
989																		
990			R	C							0.625		751		1/1/1900 0:00	1		
991																		
992																		
993			R	F	2B					1				1	1/1/1900 0:00	11	10	20
994			R	F	2B					2				1	1/1/1900 0:00	10	20	11
995			H	F	2B					1				1	1/1/1900 0:00	11	20	10
996			R	F	2B					6				1	1/1/1900 0:00	20	10	11
997			H	F	2B					6				1	1/1/1900 0:00	11	10	20
998			R	F	4A					40				1	1/1/1900 0:00	10	20	11
999			H	F	1A					40				1	1/1/1900 0:00	20	10	
1000			H	F	2B					5				1	1/1/1900 0:00	20	10	11
1001			N	C	2B						24	35300		5800000	11/1/2004 0:00	20	10	6
1002			R	C	2B						8	80492			1/1/1900 0:00	20	10	
1003			R	C	2B						12	4596			1/1/1900 0:00	10	20	
1004			R	C	2B						24	2370			1/1/1900 0:00	10	20	
1005			R	C	2B						8	14446			1/1/1900 0:00	10	20	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
964			338							
965			338							
966			338							
967			338							
968			338							
969			338							
970			338							
971			416	340						
972			308							
973			262	502						
974			100							
975			340							
976			336							
977			244							
978			100							
979			100							
980			324							
981			338							
982			324							
983			324							
984			324							
985			340							
986			340							
987			340							
988			216	212						
989			154							
990			344							
991			262							
992			262							
993			100							
994			100							
995			100							
996			100							
997			100							
998			100							
999			308							
1000			100							
1001			100							
1002			100							
1003			100							
1004			100							
1005			100							

	A	B	C	D
1006	MI0004570	MUSKEGON	1033243	3000
1007	MI0004570	MUSKEGON	1033243	3001
1008	MI0004570	MUSKEGON	1033243	3002
1009	MI0004570	MUSKEGON	1033243	3005
1010	MI0004570	MUSKEGON	1033243	3006
1011	MI0004570	MUSKEGON	1033243	3007
1012	MI0004580	MUSKEGON HEIGHTS	314020	1000
1013	MI0004580	MUSKEGON HEIGHTS	314020	1001
1014	MI0004580	MUSKEGON HEIGHTS	314020	1003
1015	MI0004580	MUSKEGON HEIGHTS	314020	1004
1016	MI0004580	MUSKEGON HEIGHTS	314020	1005
1017	MI0004580	MUSKEGON HEIGHTS	314020	1006
1018	MI0004580	MUSKEGON HEIGHTS	314020	1007
1019	MI0004580	MUSKEGON HEIGHTS	314020	1008
1020	MI0004580	MUSKEGON HEIGHTS	314020	1010
1021	MI0004580	MUSKEGON HEIGHTS	314020	1018
1022	MI0004580	MUSKEGON HEIGHTS	314020	1019
1023	MI0004580	MUSKEGON HEIGHTS	314020	1020
1024	MI0004580	MUSKEGON HEIGHTS	314020	1021
1025	MI0004580	MUSKEGON HEIGHTS	314020	1022
1026	MI0004580	MUSKEGON HEIGHTS	314020	1023
1027	MI0004580	MUSKEGON HEIGHTS	314020	1024
1028	MI0004580	MUSKEGON HEIGHTS	314020	1025
1029	MI0004580	MUSKEGON HEIGHTS	314020	1026
1030	MI0004580	MUSKEGON HEIGHTS	314020	1027
1031	MI0004580	MUSKEGON HEIGHTS	314020	1028
1032	MI0004580	MUSKEGON HEIGHTS	314020	1029
1033	MI0004580	MUSKEGON HEIGHTS	314020	1030
1034	MI0004580	MUSKEGON HEIGHTS	314020	1031
1035	MI0004580	MUSKEGON HEIGHTS	314020	1032
1036	MI0004580	MUSKEGON HEIGHTS	314020	1033
1037	MI0004580	MUSKEGON HEIGHTS	314020	1034
1038	MI0004580	MUSKEGON HEIGHTS	314020	1035
1039	MI0004580	MUSKEGON HEIGHTS	314020	1036
1040	MI0004580	MUSKEGON HEIGHTS	314020	1037
1041	MI0004580	MUSKEGON HEIGHTS	314020	1038
1042	MI0004580	MUSKEGON HEIGHTS	314020	1039
1043	MI0004580	MUSKEGON HEIGHTS	314020	1040
1044	MI0004580	MUSKEGON HEIGHTS	314020	1041
1045	MI0004580	MUSKEGON HEIGHTS	314020	1043
1046	MI0004580	MUSKEGON HEIGHTS	314020	2000
1047	MI0004580	MUSKEGON HEIGHTS	314020	2001





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1006																		
1007																		
1008			R	F	2B	1A									1/1/1900 0:00	20	10	11
1009			R	F	4A						8				1/1/1900 0:00	10	20	
1010			R	C	4A						0.75		12900		1/1/1900 0:00	20	10	
1011																		
1012			R	F	4A					16.8					1/1/1900 0:00	20		
1013			H	F	4A					34					1/1/1900 0:00	20		
1014			R	F	2B					4.9					1/1/1900 0:00	20		
1015			R	F	2B					5.4					1/1/1900 0:00	20		
1016			R	F	2B					8.8					1/1/1900 0:00	20		
1017			H	F	2B					7.4					1/1/1900 0:00	20		
1018			H	F	2B					4.6					1/1/1900 0:00	20		
1019			R	F	2B	1A				25.2					1/1/1900 0:00	20		
1020			R	F	1A					25.2					1/1/1900 0:00	20		
1021			R	F	1A					25.2					1/1/1900 0:00	20		
1022			R	C	1A					14.04					1/1/1900 0:00	20		
1023			H	F	1A					14.04					1/1/1900 0:00	20		
1024			R	F	2B					4.46					1/1/1900 0:00	20		
1025			R	F	2B					6.05					1/1/1900 0:00	20		
1026			R	F	2B					2.02					1/1/1900 0:00	20		
1027			H	F	2B					5					1/1/1900 0:00	20		
1028			R	C	2B					15.2					1/1/1900 0:00	20		
1029			H	F	4A					25					1/1/1900 0:00	20		
1030			H	F	2B					0.75					1/1/1900 0:00	20		
1031			H	F	2B					0.5					1/1/1900 0:00	20		
1032			H	F	2B					1					1/1/1900 0:00	20		
1033			H	F	1A					0.091					1/1/1900 0:00	20		
1034			H	F	1A					0.121					1/1/1900 0:00	20		
1035			H	F	1A					0.082					1/1/1900 0:00	20		
1036			H	F	1A					0.038					1/1/1900 0:00	20		
1037			H	F	1A					2					1/1/1900 0:00	20		
1038			R	F	1A					25					1/1/1900 0:00	20		
1039			R	F	1A					25					1/1/1900 0:00	20		
1040			R	F	4A					25					1/1/1900 0:00	20		
1041			R	C	1A					25					1/1/1900 0:00	20		
1042			R	F	4A					25					1/1/1900 0:00	20		
1043			R	F	1A										1/1/1900 0:00	20		
1044			R	F	1A										1/1/1900 0:00	20		
1045			R	F	1A					0.004			6		1/1/1900 0:00	20		
1046			R	F	4A						30	3078			1/1/1900 0:00	20		
1047			R	C	4A						8	5140			1/1/1900 0:00	20		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1006			262							
1007			262							
1008			100							
1009			340							
1010			340							
1011			216	264						
1012			100							
1013			100							
1014			100							
1015			100							
1016			100							
1017			100							
1018			100							
1019			100							
1020			100							
1021			100							
1022			100							
1023			100							
1024			100							
1025			100							
1026			100							
1027			100							
1028			100							
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1034			100							
1035			100							
1036			100							
1037			100							
1038			100							
1039			100							
1040			100							
1041			100							
1042			100							
1043			304							
1044			304							
1045			326							
1046			100							
1047			100							

	A	B	C	D
1048	MI0004580	MUSKEGON HEIGHTS	314020	2002
1049	MI0004580	MUSKEGON HEIGHTS	314020	3003
1050	MI0004580	MUSKEGON HEIGHTS	314020	3004
1051	MI0004580	MUSKEGON HEIGHTS	314020	3005
1052	MI0004580	MUSKEGON HEIGHTS	314020	3006
1053	MI0004580	MUSKEGON HEIGHTS	314020	3007
1054	MI0004580	MUSKEGON HEIGHTS	314020	3008
1055	MI0004580	MUSKEGON HEIGHTS	314020	3009
1056	MI0004580	MUSKEGON HEIGHTS	314020	3010
1057	MI0004580	MUSKEGON HEIGHTS	314020	3011
1058	MI0004580	MUSKEGON HEIGHTS	314020	3012
1059	MI0004580	MUSKEGON HEIGHTS	314020	3013
1060	MI0004580	MUSKEGON HEIGHTS	314020	3017
1061	MI0004580	MUSKEGON HEIGHTS	314020	3018
1062	MI0004580	MUSKEGON HEIGHTS	314020	3019
1063	MI0004580	MUSKEGON HEIGHTS	314020	3020
1064	MI0004580	MUSKEGON HEIGHTS	314020	3021
1065	MI0004580	MUSKEGON HEIGHTS	314020	3022
1066	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1002
1067	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1003
1068	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1004
1069	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1005
1070	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1006
1071	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1007
1072	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1008
1073	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1009
1074	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1010
1075	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	1011
1076	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	2000
1077	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	2001
1078	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	2002
1079	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	2003
1080	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	3000
1081	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	3001
1082	MI0004800	MICHIGAN-AMERICAN WATER CO	447309	3002
1083	MI0004845	NORTHVILLE TOWNSHIP	798900	1000
1084	MI0004845	NORTHVILLE TOWNSHIP	798900	1001
1085	MI0004845	NORTHVILLE TOWNSHIP	798900	1002
1086	MI0004845	NORTHVILLE TOWNSHIP	798900	2001
1087	MI0004845	NORTHVILLE TOWNSHIP	798900	2002
1088	MI0004845	NORTHVILLE TOWNSHIP	798900	2003
1089	MI0004845	NORTHVILLE TOWNSHIP	798900	2004





	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1048			100							
1049			100							
1050			100							
1051			100							
1052			100							
1053			100							
1054			100							
1055			100							
1056			304							
1057			304							
1058			100							
1059			100							
1060			100							
1061			100							
1062			100							
1063			100							
1064			100							
1065			100							
1066			244							
1067			308	326						
1068			308							
1069			308							
1070			308							
1071			100							
1072			328							
1073			328							
1074			100							
1075			100							
1076			308	214	190					
1077			214	190	308					
1078			308	190	214					
1079			308							
1080			308	340						
1081			308							
1082			298							
1083			324	308						
1084			338	324						
1085			100							
1086			216							
1087			100							
1088			100							
1089			114	216						

	A	B	C	D
1090	MI0004845	NORTHVILLE TOWNSHIP	798900	2005
1091	MI0004845	NORTHVILLE TOWNSHIP	798900	2006
1092	MI0004845	NORTHVILLE TOWNSHIP	798900	2007
1093	MI0004845	NORTHVILLE TOWNSHIP	798900	3000
1094	MI0004845	NORTHVILLE TOWNSHIP	798900	3001
1095	MI0004850	NORTON SHORES	865762	1000
1096	MI0004850	NORTON SHORES	865762	1001
1097	MI0004850	NORTON SHORES	865762	1002
1098	MI0004850	NORTON SHORES	865762	1003
1099	MI0004850	NORTON SHORES	865762	1004
1100	MI0004850	NORTON SHORES	865762	2000
1101	MI0004850	NORTON SHORES	865762	2001
1102	MI0004850	NORTON SHORES	865762	2002
1103	MI0004850	NORTON SHORES	865762	2003
1104	MI0004850	NORTON SHORES	865762	2004
1105	MI0004850	NORTON SHORES	865762	2005
1106	MI0004850	NORTON SHORES	865762	2006
1107	MI0004850	NORTON SHORES	865762	3000
1108	MI0004850	NORTON SHORES	865762	3001
1109	MI0004850	NORTON SHORES	865762	3002
1110	MI0004850	NORTON SHORES	865762	3003
1111	MI0004850	NORTON SHORES	865762	3004
1112	MI0004850	NORTON SHORES	865762	3005
1113	MI0004850	NORTON SHORES	865762	3006
1114	MI0004850	NORTON SHORES	865762	3007
1115	MI0004850	NORTON SHORES	865762	3008
1116	MI0004880	OAK PARK	607200	1000
1117	MI0004880	OAK PARK	607200	1001
1118	MI0004880	OAK PARK	607200	1002
1119	MI0004880	OAK PARK	607200	1003
1120	MI0004880	OAK PARK	607200	1004
1121	MI0004880	OAK PARK	607200	2000
1122	MI0004880	OAK PARK	607200	2001
1123	MI0004880	OAK PARK	607200	2002
1124	MI0004880	OAK PARK	607200	2003
1125	MI0004880	OAK PARK	607200	2004
1126	MI0004880	OAK PARK	607200	2005
1127	MI0004880	OAK PARK	607200	2006
1128	MI0004880	OAK PARK	607200	3000
1129	MI0004880	OAK PARK	607200	3001
1130	MI0005138	OXFORD TOWNSHIP	296736	1000
1131	MI0005138	OXFORD TOWNSHIP	296736	1001





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1090																		
1091																		
1092			R	F	4A						8	76140			1/1/1900 0:00	10		
1093			R	C	2D						0.625		2800		1/1/1900 0:00	10	11	
1094			R	F	2D						0.625		5235		1/1/1900 0:00	10		
1095			N	F	1A	2B				30			1	12150000	3/1/2010 0:00	10	2	8
1096			N	F	1A	2B				15			1	28036400	3/1/2010 0:00	10	2	8
1097			N	C	2B					0.5			1	1300000	3/1/2010 0:00	2	10	6
1098			H	F	2B	1F				5.2			1		1/1/1900 0:00	6	10	
1099			H	F	2B					0.5			1		1/1/1900 0:00	10		
1100			R	C	2B							8	4330		1/1/1900 0:00	1	10	
1101			R	C	2B						8	2300		230000	4/1/2009 0:00	10	1	
1102			N	C	2B	1F						8	2550	270000	4/1/2009 0:00	1	10	
1103			R	F	2B							8	71000		1/1/1900 0:00	1	10	
1104			N	C	1F	2B					8	1300			1/1/1900 0:00	1	10	
1105			N	C	2B	1F					12	5300			1/1/1900 0:00	1	10	
1106			N	F	2B									260400	3/1/2010 0:00	2	10	8
1107			R	C	2D						0.75		7995		1/1/1900 0:00	10		
1108			R	C	2B						4		1		1/1/1900 0:00	10		
1109			N	F	1A	2B					1000		1		1/1/1900 0:00	10		
1110			R	F	2B						80		1		1/1/1900 0:00	10		
1111																		
1112																		
1113			R	C	2B						6		2		1/1/1900 0:00	10		
1114			R	C	2B						8		1		1/1/1900 0:00	10		
1115			R	C	2B						12		1		1/1/1900 0:00	10		
1116			H	F	4A					6			1		1/1/1900 0:00	10	2	
1117			H	F	4A								1		1/1/1900 0:00	10		
1118			H	F	4A						8.5		1		1/1/1900 0:00	10		
1119			H	F	4A						18.58		1		1/1/1900 0:00	10		
1120			H	F	4A						34.56		1		1/1/1900 0:00	10		
1121			R	F	4A							24			1/1/1900 0:00	10		
1122			R	F	4A							1300			1/1/1900 0:00	10		
1123			R	F	4A						12	10000			1/1/1900 0:00	10		
1124			R	F	4A						8	6300			1/1/1900 0:00	10		
1125			R	F	4A						6	5200			1/1/1900 0:00	10		
1126			R	F	4A						16	225			1/1/1900 0:00	10		
1127			R	F	4A						8	25600			1/1/1900 0:00	10		
1128			R	F	4A						6	12090			1/1/1900 0:00	10		
1129			R	F	4A								10900		1/1/1900 0:00	10		
1130			R	C	4A					0.864			1	96116	4/1/2011 0:00	8	11	
1131			N	C	4A					0.864			1	4700	4/1/2011 0:00	11	8	10

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1090			114	216						
1091			216	114						
1092			416	190						
1093			100							
1094			100							
1095			326	336	332					
1096			336	332						
1097			100							
1098			244							
1099			100							
1100			100							
1101			100							
1102			100							
1103			100							
1104			100							
1105			100							
1106			348	336						
1107			344	340						
1108			278							
1109			100							
1110			100							
1111			250	100						
1112			250							
1113			280							
1114			280							
1115			280							
1116			308							
1117			100							
1118			100							
1119			100							
1120			100							
1121			100							
1122			100							
1123			100							
1124			100							
1125			100							
1126			100							
1127			100							
1128			126							
1129			100							
1130			324	336						
1131			334							

		B		C	D
		A			
1132	MI0005138	OXFORD TOWNSHIP		296736	1002
1133	MI0005138	OXFORD TOWNSHIP		296736	1003
1134	MI0005138	OXFORD TOWNSHIP		296736	1004
1135	MI0005138	OXFORD TOWNSHIP		296736	1005
1136	MI0005138	OXFORD TOWNSHIP		296736	1006
1137	MI0005138	OXFORD TOWNSHIP		296736	1007
1138	MI0005138	OXFORD TOWNSHIP		296736	1008
1139	MI0005138	OXFORD TOWNSHIP		296736	1009
1140	MI0005138	OXFORD TOWNSHIP		296736	1010
1141	MI0005138	OXFORD TOWNSHIP		296736	1011
1142	MI0005138	OXFORD TOWNSHIP		296736	1012
1143	MI0005138	OXFORD TOWNSHIP		296736	1013
1144	MI0005138	OXFORD TOWNSHIP		296736	1014
1145	MI0005138	OXFORD TOWNSHIP		296736	1015
1146	MI0005138	OXFORD TOWNSHIP		296736	1016
1147	MI0005138	OXFORD TOWNSHIP		296736	1017
1148	MI0005138	OXFORD TOWNSHIP		296736	1018
1149	MI0005138	OXFORD TOWNSHIP		296736	1019
1150	MI0005138	OXFORD TOWNSHIP		296736	1020
1151	MI0005138	OXFORD TOWNSHIP		296736	1021
1152	MI0005138	OXFORD TOWNSHIP		296736	1022
1153	MI0005138	OXFORD TOWNSHIP		296736	1023
1154	MI0005138	OXFORD TOWNSHIP		296736	1024
1155	MI0005138	OXFORD TOWNSHIP		296736	1025
1156	MI0005138	OXFORD TOWNSHIP		296736	1026
1157	MI0005138	OXFORD TOWNSHIP		296736	1027
1158	MI0005138	OXFORD TOWNSHIP		296736	2000
1159	MI0005138	OXFORD TOWNSHIP		296736	2001
1160	MI0005138	OXFORD TOWNSHIP		296736	2002
1161	MI0005138	OXFORD TOWNSHIP		296736	2003
1162	MI0005138	OXFORD TOWNSHIP		296736	2004
1163	MI0005138	OXFORD TOWNSHIP		296736	2005
1164	MI0005138	OXFORD TOWNSHIP		296736	2006
1165	MI0005138	OXFORD TOWNSHIP		296736	3000
1166	MI0005138	OXFORD TOWNSHIP		296736	3001
1167	MI0005138	OXFORD TOWNSHIP		296736	3002
1168	MI0005138	OXFORD TOWNSHIP		296736	3003
1169	MI0005138	OXFORD TOWNSHIP		296736	3004
1170	MI0005138	OXFORD TOWNSHIP		296736	3005
1171	MI0005138	OXFORD TOWNSHIP		296736	3006
1172	MI0005420	PLYMOUTH TWP		931395	1000
1173	MI0005420	PLYMOUTH TWP		931395	1001



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1132			R	F	4A					1.44					1/1/1900 0:00	8	11	10
1133			R	F	4A					0.864					1/1/1900 0:00	10	11	8
1134			R	F	4A					1.44					1/1/1900 0:00	11	10	8
1135			R	C	4A					0.288					1/1/1900 0:00	10	11	
1136			R	C	4A					1.152					1/1/1900 0:00	11	10	
1137			R	F	4A					0.648					1/1/1900 0:00	11	10	
1138			H	C	4A					1.152					1/1/1900 0:00	11	10	
1139			R	F	4A					1.05					1/1/1900 0:00	11	10	
1140			H	F	4A					0.576					1/1/1900 0:00	10	11	
1141			R	C	4A					0.392					1/1/1900 0:00	10	11	
1142			R	F	4A					0.432					1/1/1900 0:00	11	10	1
1143			H	C	4A					0.504					1/1/1900 0:00	1	10	11
1144			R	F	4A					0.498					1/1/1900 0:00	1	10	11
1145			R	C	4A					0.876					1/1/1900 0:00	11	1	10
1146																		
1147			R	C	4A										1/1/1900 0:00	10	6	11
1148			H	F	4A					0.5					1/1/1900 0:00	10		
1149			H	F	4A					1					1/1/1900 0:00	10		
1150			H	F	4A					2.81					1/1/1900 0:00	10		
1151			H	F	4A					5					1/1/1900 0:00	10		
1152			H	F	4A					3.89					1/1/1900 0:00	10		
1153			H	F	4A					4.18					1/1/1900 0:00	10		
1154			R	F	2B					180					1/1/1900 0:00	10		
1155			R	F	2B					100					1/1/1900 0:00	10		
1156			R	F	2B					125					1/1/1900 0:00	10		
1157			R	F	2B					215					1/1/1900 0:00	10		
1158			N	F	4A						16	3493			1/1/1900 0:00	1	10	11
1159																		
1160			N	F							8	1502			1/1/1900 0:00	11	1	10
1161																		
1162			N	F							12	1042			1/1/1900 0:00	10	1	11
1163			N	F							16	2940			1/1/1900 0:00	1	11	10
1164			R	F	4A						8	12500			1/1/1900 0:00	10		
1165			R	F							0.625				1/1/1900 0:00	11	10	
1166			R	F							1				1/1/1900 0:00	11	10	
1167			R	F							1.5				1/1/1900 0:00	11	10	
1168			R	F							2				1/1/1900 0:00	10	11	
1169			R	F							3				1/1/1900 0:00	11	10	
1170			R	F							4				1/1/1900 0:00	11	10	
1171			R	F							6				1/1/1900 0:00	10	11	
1172																		
1173			H	C	4A					1					7/1/2010 0:00	10	1	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1132			244							
1133			244							
1134			244							
1135			244							
1136			244							
1137			244							
1138			100							
1139			244							
1140			100							
1141			244							
1142			180	400	402					
1143			400	180						
1144			402	180	400					
1145			402	180	400					
1146			180							
1147			100							
1148			100							
1149			100							
1150			100							
1151			100							
1152			100							
1153			100							
1154			100							
1155			100							
1156			100							
1157			100							
1158			100							
1159			114	118						
1160			100							
1161			412	180	114					
1162			100							
1163			100							
1164			100							
1165			100							
1166			100							
1167			100							
1168			100							
1169			100							
1170			100							
1171			100							
1172			216							
1173			100							

		B			C	D
		A				
1174	MI0005420	PLYMOUTH TWP				1002
1175	MI0005420	PLYMOUTH TWP				2000
1176	MI0005420	PLYMOUTH TWP				2003
1177	MI0005420	PLYMOUTH TWP				2004
1178	MI0005420	PLYMOUTH TWP				2005
1179	MI0005420	PLYMOUTH TWP				2006
1180	MI0005420	PLYMOUTH TWP				3000
1181	MI0005420	PLYMOUTH TWP				3001
1182	MI0005420	PLYMOUTH TWP				3002
1183	MI0005420	PLYMOUTH TWP				3003
1184	MI0005420	PLYMOUTH TWP				3004
1185	MI0005420	PLYMOUTH TWP				3005
1186	MI0005420	PLYMOUTH TWP				3006
1187	MI0005420	PLYMOUTH TWP				3007
1188	MI0005420	PLYMOUTH TWP				3008
1189	MI0005420	PLYMOUTH TWP				3009
1190	MI0005420	PLYMOUTH TWP				3010
1191	MI0005420	PLYMOUTH TWP				3011
1192	MI0005480	PORT HURON				1000
1193	MI0005480	PORT HURON				1001
1194	MI0005480	PORT HURON				1002
1195	MI0005480	PORT HURON				1003
1196	MI0005480	PORT HURON				1004
1197	MI0005480	PORT HURON				1005
1198	MI0005480	PORT HURON				2000
1199	MI0005480	PORT HURON				2001
1200	MI0005480	PORT HURON				2002
1201	MI0005480	PORT HURON				2003
1202	MI0005480	PORT HURON				2004
1203	MI0005480	PORT HURON				2005
1204	MI0005480	PORT HURON				2006
1205	MI0005480	PORT HURON				2007
1206	MI0005480	PORT HURON				2008
1207	MI0005480	PORT HURON				2009
1208	MI0005480	PORT HURON				2010
1209	MI0005480	PORT HURON				2011
1210	MI0005480	PORT HURON				2012
1211	MI0005480	PORT HURON				2013
1212	MI0005480	PORT HURON				2014
1213	MI0005480	PORT HURON				2015
1214	MI0005480	PORT HURON				2016
1215	MI0005480	PORT HURON				2017





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1174			H	F	4A					0.4			1		1/1/1900 0:00	10		
1175																		
1176			R	C	4A						8	250		43000	7/1/2010 0:00		1	10
1177			R	C	4A						8	1100		306000	7/1/2010 0:00		1	10
1178			R	C	4A						8	1300		230000	7/1/2010 0:00		10	1
1179			R	C	4A						8	90490			1/1/1900 0:00		10	
1180			R	C	2D						0.75		2284		1/1/1900 0:00		11	
1181			R	C	2D						1		612		1/1/1900 0:00		11	
1182			R	C	2D						1.5		133		1/1/1900 0:00		11	
1183			R	C	2D						2		102		1/1/1900 0:00		11	
1184			R	C	2D						3		25		1/1/1900 0:00		11	
1185			R	C	2D						4		15		1/1/1900 0:00		11	
1186			R	C	2D						6		4		1/1/1900 0:00		11	
1187			R	C	2D						8		3		1/1/1900 0:00		11	
1188			R	C	2D						10		1		1/1/1900 0:00		11	
1189			R	F	2D						0.75		6442		1/1/1900 0:00		10	
1190																		
1191		N	C								20			25000	7/1/2010 0:00		1	10
1192		H	F							30			1		1/1/1900 0:00		6	
1193		R	F							750			1		1/1/1900 0:00		6	
1194																		
1195		H	F							1					1/1/1900 0:00		6	
1196		H	F							0.5			1		1/1/1900 0:00		6	
1197		H	F							1.5			1		1/1/1900 0:00		6	
1198		R	C		1D						8	2587			1/1/1900 0:00		2	
1199		R	C		1D						8	9240			1/1/1900 0:00		2	
1200		R	C		1D						12	3694			1/1/1900 0:00		2	
1201		R	C		1D						10	528			1/1/1900 0:00		2	
1202		R	C		1D						8	4912			1/1/1900 0:00		2	
1203		R	C		1D						8	6914			1/1/1900 0:00		2	
1204		R	C		1D						12	2852			1/1/1900 0:00		2	
1205		R	C								8	8653			1/1/1900 0:00		2	
1206		R	C		1D						12	1426			1/1/1900 0:00		2	
1207		R	C		1D						8	10190			1/1/1900 0:00		2	
1208		R	C		1D						8	4963			1/1/1900 0:00		2	
1209		R	C		1D						8	2269			1/1/1900 0:00		2	
1210		R	C		1D						8	11879			1/1/1900 0:00		2	
1211		R	C		1D						8	10018			1/1/1900 0:00		2	
1212		R	C		1D						8	3590			1/1/1900 0:00		2	
1213		R	C		1D						8	844			1/1/1900 0:00		2	
1214		R	C		1D						8	2270			1/1/1900 0:00		2	
1215		R	C		1D						8	3911			1/1/1900 0:00		2	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1174			100							
1175			326	144	216					
1176			100							
1177			100							
1178			100							
1179			100							
1180			308							
1181			308							
1182			308							
1183			308							
1184			308							
1185			308							
1186			308							
1187			308							
1188			308							
1189			308							
1190			216							
1191			100							
1192			100							
1193			324							
1194			200							
1195			324							
1196			324							
1197			324							
1198			324	334	332	308				
1199			332	334	324	308				
1200			334	332	278	308	324			
1201			332	278	308	334	324			
1202			332	324	308	334				
1203			332	334	324	308				
1204			332	308	334	324				
1205			308	278	324					
1206			334	308	332	324				
1207			324	332	334	308				
1208			324	308	332	334				
1209			324	334	308	332				
1210			332	308	334	278	324			
1211			324	308	334	332				
1212			332	324	334	308				
1213			278	324	332	308	334			
1214			332	278	324	308	334			
1215			324	334	332	308				

		B		C	D
A					
1216	MI0005480	PORT HURON		869404	2018
1217	MI0005480	PORT HURON		869404	2019
1218	MI0005480	PORT HURON		869404	2020
1219	MI0005480	PORT HURON		869404	2021
1220	MI0005480	PORT HURON		869404	2022
1221	MI0005480	PORT HURON		869404	2023
1222	MI0005480	PORT HURON		869404	2024
1223	MI0005480	PORT HURON		869404	2025
1224	MI0005480	PORT HURON		869404	2026
1225	MI0005480	PORT HURON		869404	3000
1226	MI0005670	RICHMOND		185725	1000
1227	MI0005670	RICHMOND		185725	1002
1228	MI0005670	RICHMOND		185725	1003
1229	MI0005670	RICHMOND		185725	1004
1230	MI0005670	RICHMOND		185725	1005
1231	MI0005670	RICHMOND		185725	1006
1232	MI0005670	RICHMOND		185725	1007
1233	MI0005670	RICHMOND		185725	1008
1234	MI0005670	RICHMOND		185725	1009
1235	MI0005670	RICHMOND		185725	1010
1236	MI0005670	RICHMOND		185725	1011
1237	MI0005670	RICHMOND		185725	1012
1238	MI0005670	RICHMOND		185725	1013
1239	MI0005670	RICHMOND		185725	1014
1240	MI0005670	RICHMOND		185725	1015
1241	MI0005670	RICHMOND		185725	1016
1242	MI0005670	RICHMOND		185725	1017
1243	MI0005670	RICHMOND		185725	2000
1244	MI0005670	RICHMOND		185725	2001
1245	MI0005670	RICHMOND		185725	2002
1246	MI0005670	RICHMOND		185725	2003
1247	MI0005670	RICHMOND		185725	2004
1248	MI0005670	RICHMOND		185725	2005
1249	MI0005670	RICHMOND		185725	2006
1250	MI0005670	RICHMOND		185725	3000
1251	MI0005670	RICHMOND		185725	3001
1252	MI0005670	RICHMOND		185725	3002
1253	MI0005670	RICHMOND		185725	3003
1254	MI0005670	RICHMOND		185725	3004
1255	MI0005670	RICHMOND		185725	3005
1256	MI0005670	RICHMOND		185725	3006
1257	MI0005670	RICHMOND		185725	3007



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1216			R	C	1D						8	5964			1/1/1900 0:00	2		
1217			R	C	1D						8	6494			1/1/1900 0:00	2		
1218			R	C							10	2007			1/1/1900 0:00	2		
1219			R	C							16	1636			1/1/1900 0:00	2		
1220			R	C	1D						10	898			1/1/1900 0:00	2		
1221			R	C	1D						12	2638			1/1/1900 0:00	2		
1222			R	C	1D						20	792			1/1/1900 0:00	2		
1223			R	C	1D						10	422			1/1/1900 0:00	2		
1224			R	C	1D						16	1531			1/1/1900 0:00	2		
1225			R	F	4A						0.75		12583		1/1/1900 0:00	6		
1226																		
1227			H	F	4A					0.4			1		1/1/1900 0:00	10		
1228			H	F						0.3			1		1/1/1900 0:00	10		
1229			H	F						0.3			1		1/1/1900 0:00	10		
1230			H	F						0.16			1		1/1/1900 0:00	10		
1231			H	F						0.42			1		1/1/1900 0:00	10		
1232			H	F						0.35			1		1/1/1900 0:00	10		
1233			H	F						0.72			1		1/1/1900 0:00	10		
1234			H	F						0.43			1		1/1/1900 0:00	10		
1235			H	F						0.3			1		1/1/1900 0:00	10		
1236			H	F						0.3			1		1/1/1900 0:00	10		
1237			H	F						0.16			1		1/1/1900 0:00	10		
1238			H	F						0.42			1		1/1/1900 0:00	10		
1239			H	F						0.72			1		1/1/1900 0:00	10		
1240			H	F						0.43			1		1/1/1900 0:00	10		
1241			R	F						0.42			2		1/1/1900 0:00	10		
1242			R	F						0.68			1		1/1/1900 0:00	10		
1243			R	C	4A						12	3100		438045	1/1/2008 0:00	4	11	
1244			R	C	4A						12	1500		192755	2/1/2010 0:00	11	4	
1245			R	C	4A						8	798		104841	3/1/2010 0:00	11	4	
1246			R	C	4A						12	400		56805	3/1/2010 0:00	4	11	
1247			R	C	4A							1500		173597	3/1/2010 0:00	4	11	
1248			R	C	4A						8	451		63573	3/1/2010 0:00	1	11	
1249			R	F	4A						8	9673			1/1/1900 0:00	10		
1250			R	F	4A						0.625		1941		1/1/1900 0:00	10		
1251			R	F	4A						0.75		7		1/1/1900 0:00	10		
1252			R	F	4A						1		324		1/1/1900 0:00	10		
1253			R	F	4A						1.5		23		1/1/1900 0:00	10		
1254			R	F	4A						2		32		1/1/1900 0:00	10		
1255			R	F	4A						3		4		1/1/1900 0:00	10		
1256			R	F	4A						4		5		1/1/1900 0:00	10		
1257			R	F	4A						6		2		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1216			280							
1217			280							
1218			280							
1219			280							
1220			280							
1221			280							
1222			280							
1223			280							
1224			280							
1225			324							
1226			262							
1227			100							
1228			100							
1229			100							
1230			100							
1231			100							
1232			100							
1233			100							
1234			100							
1235			326							
1236			326							
1237			244	214						
1238			214	244						
1239			244	214						
1240			214	244						
1241			100							
1242			100							
1243			324	330						
1244			324	330	340					
1245			330	324	336					
1246			330	324						
1247			324	348	330					
1248			324	330	336					
1249			344							
1250			100							
1251			100							
1252			100							
1253			100							
1254			100							
1255			100							
1256			100							
1257			100							

	A	B	C	D
1258	MI0005710	RIVERVIEW	279297	2000
1259	MI0005710	RIVERVIEW	279297	2001
1260	MI0005710	RIVERVIEW	279297	2002
1261	MI0005710	RIVERVIEW	279297	2003
1262	MI0005710	RIVERVIEW	279297	2004
1263	MI0005710	RIVERVIEW	279297	2005
1264	MI0005710	RIVERVIEW	279297	2006
1265	MI0005710	RIVERVIEW	279297	2007
1266	MI0005710	RIVERVIEW	279297	2008
1267	MI0005710	RIVERVIEW	279297	2009
1268	MI0005710	RIVERVIEW	279297	2010
1269	MI0005710	RIVERVIEW	279297	2011
1270	MI0005710	RIVERVIEW	279297	2012
1271	MI0005710	RIVERVIEW	279297	2013
1272	MI0005710	RIVERVIEW	279297	2014
1273	MI0005710	RIVERVIEW	279297	2015
1274	MI0005710	RIVERVIEW	279297	3000
1275	MI0005710	RIVERVIEW	279297	3001
1276	MI0005785	ROMULUS	1056000	2000
1277	MI0005785	ROMULUS	1056000	2001
1278	MI0005785	ROMULUS	1056000	2002
1279	MI0005785	ROMULUS	1056000	2003
1280	MI0005785	ROMULUS	1056000	2004
1281	MI0005785	ROMULUS	1056000	2005
1282	MI0005785	ROMULUS	1056000	2006
1283	MI0005785	ROMULUS	1056000	2007
1284	MI0005785	ROMULUS	1056000	2008
1285	MI0005785	ROMULUS	1056000	2009
1286	MI0005785	ROMULUS	1056000	2010
1287	MI0005785	ROMULUS	1056000	2011
1288	MI0005785	ROMULUS	1056000	2012
1289	MI0005785	ROMULUS	1056000	3000
1290	MI0005850	SAGINAW, CITY OF	2112000	1000
1291	MI0005850	SAGINAW, CITY OF	2112000	1001
1292	MI0005850	SAGINAW, CITY OF	2112000	1002
1293	MI0005850	SAGINAW, CITY OF	2112000	1003
1294	MI0005850	SAGINAW, CITY OF	2112000	1004
1295	MI0005850	SAGINAW, CITY OF	2112000	1007
1296	MI0005850	SAGINAW, CITY OF	2112000	1008
1297	MI0005850	SAGINAW, CITY OF	2112000	1009
1298	MI0005850	SAGINAW, CITY OF	2112000	1013
1299	MI0005850	SAGINAW, CITY OF	2112000	1018





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1258			R	C	4A						8	1570		157000	1/1/2005 0:00	1	20	
1259			R	C	4A						8	2830		283000	1/1/2005 0:00	20	1	
1260			R	C	4A						8	1900		190000	1/1/2005 0:00	1	20	
1261			R	C	4A						8	2650		265000	1/1/2005 0:00	1	20	
1262			R	C	4A						8	2620		262000	1/1/2005 0:00	1	20	
1263			N	C	4A						6	245		23500	1/1/2005 0:00	20	1	10
1264			N	C	4A						6	1950		185500	1/1/2005 0:00	10	20	1
1265			N	C	4A						6	375		36000	1/1/2005 0:00	20	10	1
1266			N	C	4A						6	1070		101500	1/1/2005 0:00	1	10	20
1267			N	C	4A						6	215		20500	1/1/2005 0:00	20	1	10
1268			N	C	4A						6	215		20500	1/1/2005 0:00	20	10	1
1269			N	C	4A						6	960		91500	1/1/2005 0:00	10	1	20
1270			N	C	4A						6	75		7500	1/1/2005 0:00	1	10	20
1271			N	C	4A						6	320		30500	1/1/2005 0:00	1	20	10
1272			N	C	4A						6	640		61000	1/1/2005 0:00	1	10	20
1273			R	C	4A						8	10265			1/1/1900 0:00	10		
1274			R	F	4A						0.75		4070		1/1/1900 0:00	20	10	
1275			R	F	4A						1		500		1/1/1900 0:00	10	20	
1276			N	C	4A						12	200		800000	10/1/2010 0:00	10	1	
1277			R	C	4A						8	1200		400000	10/1/2010 0:00	10	1	
1278			N	C	4A						8	700		200000	10/1/2010 0:00	1	10	
1279			N	C	4A						12	3600		1000000	10/1/2010 0:00	10	1	
1280			N	C	4A						12	4800		1250000	10/1/2010 0:00	10	1	
1281			R	C	4A						12	3300		1500000	10/1/2010 0:00	10	1	
1282			R	C	4A						12	2800		1000000	10/1/2010 0:00	1	10	
1283			R	C	4A						12	5200		1000000	10/1/2010 0:00	10	1	
1284			R	C	4A						8	3200		1500000	10/1/2010 0:00	1	10	
1285			R	C	4A						8	1300		250000	10/1/2010 0:00	1	10	
1286			R	C	4A						12	1500		500000	10/1/2010 0:00	1	10	
1287			R	C	4A						12	1500		500000	10/1/2010 0:00	10	1	
1288			R	C	4A						8	85600			1/1/1900 0:00	1	10	
1289			R	F							1		6700		1/1/1900 0:00	1	10	
1290			H	C	1A								1	2100000	6/1/2007 0:00	20		
1291																		
1292			N	C	2A	1A					48	62000		17000000	9/1/2001 0:00	20		
1293			R	C										100000	7/1/2010 0:00	11	1	
1294			N	C						400			1	163000	6/1/2007 0:00	2	11	
1295																		
1296			N	C	2B	2D				1			1	2000000	8/1/2009 0:00	1	11	
1297			N	C	2D	2B				1			1	2000000	8/1/2009 0:00	1	11	
1298			N	C	2B					5			1		1/1/1900 0:00	1	11	
1299			H	F	4A					6.5			1	1	1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1258			340							
1259			100							
1260			100							
1261			100							
1262			100							
1263			100							
1264			100							
1265			100							
1266			100							
1267			100							
1268			100							
1269			100							
1270			100							
1271			100							
1272			100							
1273			100							
1274			100							
1275			100							
1276			100							
1277			100							
1278			100							
1279			100							
1280			100							
1281			100							
1282			100							
1283			100							
1284			100							
1285			100							
1286			100							
1287			100							
1288			190	308						
1289			324	328						
1290			328							
1291			216							
1292			100							
1293			328	326	324					
1294			324							
1295			114							
1296			324	334						
1297			334	324						
1298			344	326	334	324	308			
1299			100							

B				C	D
A					
1300	MI0005850	SAGINAW, CITY OF		2112000	1019
1301	MI0005850	SAGINAW, CITY OF		2112000	1020
1302	MI0005850	SAGINAW, CITY OF		2112000	1021
1303	MI0005850	SAGINAW, CITY OF		2112000	1022
1304	MI0005850	SAGINAW, CITY OF		2112000	1023
1305	MI0005850	SAGINAW, CITY OF		2112000	1024
1306	MI0005850	SAGINAW, CITY OF		2112000	1025
1307	MI0005850	SAGINAW, CITY OF		2112000	1026
1308	MI0005850	SAGINAW, CITY OF		2112000	1027
1309	MI0005850	SAGINAW, CITY OF		2112000	1028
1310	MI0005850	SAGINAW, CITY OF		2112000	2002
1311	MI0005850	SAGINAW, CITY OF		2112000	2003
1312	MI0005850	SAGINAW, CITY OF		2112000	2005
1313	MI0005850	SAGINAW, CITY OF		2112000	2006
1314	MI0005850	SAGINAW, CITY OF		2112000	2007
1315	MI0005850	SAGINAW, CITY OF		2112000	2009
1316	MI0005850	SAGINAW, CITY OF		2112000	2010
1317	MI0005850	SAGINAW, CITY OF		2112000	2011
1318	MI0005850	SAGINAW, CITY OF		2112000	2012
1319	MI0005850	SAGINAW, CITY OF		2112000	2013
1320	MI0005850	SAGINAW, CITY OF		2112000	2014
1321	MI0005850	SAGINAW, CITY OF		2112000	2015
1322	MI0005850	SAGINAW, CITY OF		2112000	2016
1323	MI0005850	SAGINAW, CITY OF		2112000	2017
1324	MI0005850	SAGINAW, CITY OF		2112000	2018
1325	MI0005850	SAGINAW, CITY OF		2112000	2019
1326	MI0005850	SAGINAW, CITY OF		2112000	2021
1327	MI0005850	SAGINAW, CITY OF		2112000	2022
1328	MI0005850	SAGINAW, CITY OF		2112000	2023
1329	MI0005850	SAGINAW, CITY OF		2112000	2024
1330	MI0005850	SAGINAW, CITY OF		2112000	2025
1331	MI0005850	SAGINAW, CITY OF		2112000	2026
1332	MI0005850	SAGINAW, CITY OF		2112000	2028
1333	MI0005850	SAGINAW, CITY OF		2112000	2029
1334	MI0005850	SAGINAW, CITY OF		2112000	2030
1335	MI0005850	SAGINAW, CITY OF		2112000	2031
1336	MI0005850	SAGINAW, CITY OF		2112000	2032
1337	MI0005850	SAGINAW, CITY OF		2112000	2033
1338	MI0005850	SAGINAW, CITY OF		2112000	2034
1339	MI0005850	SAGINAW, CITY OF		2112000	2035
1340	MI0005850	SAGINAW, CITY OF		2112000	2037
1341	MI0005850	SAGINAW, CITY OF		2112000	2038



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1300			H	F	4A					1.9			1		1/1/1900 0:00	10		
1301			H	F	4A					1.9			1		1/1/1900 0:00	10		
1302			H	F	4A					27			1		1/1/1900 0:00	10		
1303			H	C	4A					4			1		1/1/1900 0:00	10		
1304			H	F	4A					2.5			1		1/1/1900 0:00	10		
1305																		
1306		N	C	C	2B	4A							1	3700000	11/1/2001 0:00	20		
1307																		
1308																		
1309		R	F	F	1B	1A				52			1		1/1/1900 0:00	10		
1310		H	C	C							8	13548		2100000	6/1/2002 0:00	20		
1311		R	C	C							8	16129		2500000	6/1/2002 0:00	20		
1312		R	C	C										3000000	6/1/2002 0:00	20		
1313		R	C	C							8	6450		1000000	6/1/2002 0:00	20		
1314		R	C	C							8	1000		1500000	6/1/2002 0:00	20		
1315		R	C	C							12	7500		1500000	6/1/2002 0:00	20		
1316		R	C	C							24	10000		2500000	6/1/2002 0:00	20		
1317		R	C	C							8	13000		2000000	6/1/2002 0:00	20		
1318		R	C	C							12	5000		1000000	6/1/2002 0:00	20		
1319		R	C	C							8	2700		420000	6/1/2002 0:00	20		
1320		R	C	C							8	5000		768000	6/1/2002 0:00	20		
1321		R	C	C							8	4000		600000	6/1/2002 0:00	20		
1322		R	C	C							12	4000		800000	6/1/2002 0:00	20		
1323		R	C	C							8	650		96000	6/1/2002 0:00	20		
1324		R	C	C										800000	6/1/2002 0:00	20		
1325		R	C	C							16	7000		1400000	6/1/2002 0:00	20		
1326		R	C	C							8	7800		1200000	6/1/2002 0:00	20		
1327		R	C	C							8	3300		500000	6/1/2002 0:00	20		
1328		R	C	C							12	8125		1625000	6/1/2002 0:00	20		
1329		R	C	C							24	5000		1000000	6/1/2002 0:00	20		
1330		R	C	C							8	4032		625000	6/1/2002 0:00	20		
1331		R	C	C							8	4032		625000	6/1/2002 0:00	20		
1332		R	C	C							12	10000		2000000	6/1/2002 0:00	20		
1333		R	C	C							8	10000		1500000	6/1/2002 0:00	20		
1334		R	C	C							8	20000		3000000	6/1/2002 0:00	20		
1335		R	C	C							8	8200		1275000	6/1/2002 0:00	20		
1336		R	C	C							8	10000		1500000	6/1/2002 0:00	20		
1337		R	C	C							36	63360		12000000	6/1/2002 0:00	20		
1338		R	C	C							8	6450		1000000	6/1/2002 0:00	20		
1339		R	C	C							8	8400		1300000	6/1/2002 0:00	20		
1340		R	C	C							8	32258		5000000	6/1/2002 0:00	20		
1341		R	C	C							8	7800		1200000	6/1/2002 0:00	20		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1300			100							
1301			100							
1302			100							
1303			100							
1304			100							
1305			262							
1306			338	326						
1307			216	262						
1308			216	262						
1309			334							
1310			334							
1311			100							
1312			100							
1313			100							
1314			100							
1315			100							
1316			100							
1317			100							
1318			100							
1319			100							
1320			100							
1321			100							
1322			100							
1323			100							
1324			100							
1325			100							
1326			100							
1327			100							
1328			100							
1329			100							
1330			100							
1331			100							
1332			100							
1333			100							
1334			100							
1335			100							
1336			100							
1337			100							
1338			100							
1339			100							
1340			100							
1341			100							

		B		C	D
		A			
1342	MI0005850	SAGINAW, CITY OF		2112000	2039
1343	MI0005850	SAGINAW, CITY OF		2112000	2040
1344	MI0005850	SAGINAW, CITY OF		2112000	2041
1345	MI0005850	SAGINAW, CITY OF		2112000	2042
1346	MI0005850	SAGINAW, CITY OF		2112000	2043
1347	MI0005850	SAGINAW, CITY OF		2112000	2044
1348	MI0005850	SAGINAW, CITY OF		2112000	2053
1349	MI0005850	SAGINAW, CITY OF		2112000	2054
1350	MI0005850	SAGINAW, CITY OF		2112000	2055
1351	MI0005850	SAGINAW, CITY OF		2112000	2056
1352	MI0005850	SAGINAW, CITY OF		2112000	2057
1353	MI0005850	SAGINAW, CITY OF		2112000	2058
1354	MI0005850	SAGINAW, CITY OF		2112000	2060
1355	MI0005850	SAGINAW, CITY OF		2112000	2061
1356	MI0005850	SAGINAW, CITY OF		2112000	2062
1357	MI0005850	SAGINAW, CITY OF		2112000	2063
1358	MI0005850	SAGINAW, CITY OF		2112000	2064
1359	MI0005850	SAGINAW, CITY OF		2112000	2066
1360	MI0005850	SAGINAW, CITY OF		2112000	2068
1361	MI0005850	SAGINAW, CITY OF		2112000	2069
1362	MI0005850	SAGINAW, CITY OF		2112000	3001
1363	MI0005850	SAGINAW, CITY OF		2112000	3003
1364	MI0005850	SAGINAW, CITY OF		2112000	3004
1365	MI0005850	SAGINAW, CITY OF		2112000	3005
1366	MI0005850	SAGINAW, CITY OF		2112000	3006
1367	MI0005850	SAGINAW, CITY OF		2112000	3007
1368	MI0005850	SAGINAW, CITY OF		2112000	3008
1369	MI0005850	SAGINAW, CITY OF		2112000	3009
1370	MI0005850	SAGINAW, CITY OF		2112000	3010
1371	MI0005850	SAGINAW, CITY OF		2112000	3011
1372	MI0005850	SAGINAW, CITY OF		2112000	3012
1373	MI0005850	SAGINAW, CITY OF		2112000	3013
1374	MI0005850	SAGINAW, CITY OF		2112000	3014
1375	MI0005850	SAGINAW, CITY OF		2112000	3015
1376	MI0005850	SAGINAW, CITY OF		2112000	3016
1377	MI0005850	SAGINAW, CITY OF		2112000	3017
1378	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1000
1379	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1005
1380	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1006
1381	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1007
1382	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1008
1383	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1009





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1342			R	C							8	14000		2200000	6/1/2002 0:00	20		
1343			R	C							24	7500		1500000	6/1/2002 0:00	20		
1344			R	C							12	12500		2500000	6/1/2002 0:00	20		
1345			R	C							8	3200		500000	6/1/2002 0:00	20		
1346			R	C							8	32000		5000000	6/1/2002 0:00	20		
1347			R	C							8	6400		1000000	6/1/2002 0:00	20		
1348			R	C										3000000	6/1/2002 0:00	20		
1349			R	C										3000000	6/1/2002 0:00	20		
1350			R	C							8	16000		2500000	6/1/2002 0:00	20		
1351			R	C							8	16000		2500000	6/1/2002 0:00	20		
1352			R	C										3000000	6/1/2002 0:00	20		
1353			R	C										2232500	7/1/2007 0:00	20		
1354			R	C							8	12800		2000000	6/1/2002 0:00	20		
1355			R	C							8	7800		1200000	6/1/2002 0:00	20		
1356			R	C							8	7800		1200000	6/1/2002 0:00	20		
1357			R	C							8	9600		1500000	6/1/2002 0:00	20		
1358			R	C							8	22500		3500000	6/1/2002 0:00	20		
1359																		
1360			R	C	4A						12	3000		638474	2/1/2007 0:00	20		
1361			R	C	4A						8	1103		129890	5/1/2007 0:00	20		
1362			R	F	1D										1/1/1900 0:00	20		
1363			R	F	4A						0.625		17486		1/1/1900 0:00	10		
1364																		
1365																		
1366																		
1367																		
1368																		
1369			R	F	2B						1		1		1/1/1900 0:00	10		
1370			R	F	2B						1.5		1		1/1/1900 0:00	10		
1371			R	F	2B						1		1		1/1/1900 0:00	10		
1372			R	F	2B						1.5		1		1/1/1900 0:00	10		
1373			R	F	4A						2		4		1/1/1900 0:00	20		
1374			R	F	4A						4		3		1/1/1900 0:00	20		
1375			R	F	4A						6		15		1/1/1900 0:00	20		
1376			R	F	4A						8		19		1/1/1900 0:00	20		
1377			R	F	4A						10		8		1/1/1900 0:00	20		
1378			R	F	4A								1		1/1/1900 0:00	20		
1379			H	F	4A					30			1		1/1/1900 0:00	10		
1380			H	F	4A					45			1		1/1/1900 0:00	10		
1381			H	F	4A					45			1		1/1/1900 0:00	10		
1382			H	C	4A					20			1		1/1/1900 0:00	10		
1383			H	C	4A					20			1		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1342			100							
1343			100							
1344			100							
1345			100							
1346			100							
1347			100							
1348			100							
1349			100							
1350			100							
1351			100							
1352			100							
1353			100							
1354			100							
1355			100							
1356			100							
1357			100							
1358			100							
1359			216							
1360			100							
1361			100							
1362			316							
1363			100							
1364			262							
1365			262							
1366			262							
1367			262							
1368			262							
1369			324							
1370			324							
1371			324							
1372			324							
1373			100							
1374			100							
1375			100							
1376			100							
1377			100							
1378			302							
1379			308							
1380			308							
1381			308							
1382			308							
1383			308							

		B		C	D
A					
1384	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1010
1385	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1011
1386	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1012
1387	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1013
1388	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1014
1389	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1015
1390	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	1016
1391	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	2000
1392	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	2001
1393	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	2002
1394	MI0005880	SAGINAW-MIDLAND WATER SUPPLY		617560	2003
1395	MI0005950	SAULT STE MARIE		422400	1000
1396	MI0005950	SAULT STE MARIE		422400	1001
1397	MI0005950	SAULT STE MARIE		422400	1002
1398	MI0005950	SAULT STE MARIE		422400	1003
1399	MI0005950	SAULT STE MARIE		422400	1004
1400	MI0005950	SAULT STE MARIE		422400	1005
1401	MI0005950	SAULT STE MARIE		422400	1006
1402	MI0005950	SAULT STE MARIE		422400	1007
1403	MI0005950	SAULT STE MARIE		422400	1008
1404	MI0005950	SAULT STE MARIE		422400	2000
1405	MI0005950	SAULT STE MARIE		422400	2001
1406	MI0005950	SAULT STE MARIE		422400	2002
1407	MI0005950	SAULT STE MARIE		422400	2003
1408	MI0005950	SAULT STE MARIE		422400	2004
1409	MI0005950	SAULT STE MARIE		422400	2005
1410	MI0005950	SAULT STE MARIE		422400	2006
1411	MI0005950	SAULT STE MARIE		422400	2007
1412	MI0005950	SAULT STE MARIE		422400	2008
1413	MI0005950	SAULT STE MARIE		422400	2009
1414	MI0005950	SAULT STE MARIE		422400	2010
1415	MI0005950	SAULT STE MARIE		422400	3000
1416	MI0005950	SAULT STE MARIE		422400	3001
1417	MI0006010	SHELBY TOWNSHIP		165000	1000
1418	MI0006010	SHELBY TOWNSHIP		165000	2000
1419	MI0006010	SHELBY TOWNSHIP		165000	2001
1420	MI0006010	SHELBY TOWNSHIP		165000	2002
1421	MI0006010	SHELBY TOWNSHIP		165000	2004
1422	MI0006010	SHELBY TOWNSHIP		165000	2005
1423	MI0006010	SHELBY TOWNSHIP		165000	2006
1424	MI0006010	SHELBY TOWNSHIP		165000	2007
1425	MI0006010	SHELBY TOWNSHIP		165000	2008



[illegible]

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1384			308							
1385			308							
1386			308							
1387			308							
1388			308							
1389			308							
1390			308							
1391			100							
1392			100							
1393			100							
1394			100							
1395			334	100						
1396			100							
1397			322	324						
1398			338	324						
1399			100							
1400			100							
1401			324	328						
1402			100							
1403			200							
1404			334	332						
1405			334	332						
1406			100							
1407			100							
1408			100							
1409			100							
1410			100							
1411			100							
1412			100							
1413			100							
1414			100							
1415			338	324	344					
1416			338	324	344					
1417			100							
1418			216							
1419			216							
1420			216							
1421			334	336	322					
1422			216							
1423			216							
1424			216							
1425			216							

	A	B	C	D
1426	MI0006010	SHELBY TOWNSHIP	165000	2009
1427	MI0006010	SHELBY TOWNSHIP	165000	2010
1428	MI0006010	SHELBY TOWNSHIP	165000	2011
1429	MI0006010	SHELBY TOWNSHIP	165000	2012
1430	MI0006010	SHELBY TOWNSHIP	165000	2013
1431	MI0006010	SHELBY TOWNSHIP	165000	2014
1432	MI0006010	SHELBY TOWNSHIP	165000	2015
1433	MI0006010	SHELBY TOWNSHIP	165000	2016
1434	MI0006010	SHELBY TOWNSHIP	165000	2017
1435	MI0006010	SHELBY TOWNSHIP	165000	2018
1436	MI0006010	SHELBY TOWNSHIP	165000	2019
1437	MI0006010	SHELBY TOWNSHIP	165000	2020
1438	MI0006010	SHELBY TOWNSHIP	165000	2021
1439	MI0006010	SHELBY TOWNSHIP	165000	2022
1440	MI0006010	SHELBY TOWNSHIP	165000	2023
1441	MI0006010	SHELBY TOWNSHIP	165000	2024
1442	MI0006010	SHELBY TOWNSHIP	165000	3000
1443	MI0006010	SHELBY TOWNSHIP	165000	3001
1444	MI0006010	SHELBY TOWNSHIP	165000	3002
1445	MI0006010	SHELBY TOWNSHIP	165000	3003
1446	MI0006010	SHELBY TOWNSHIP	165000	3004
1447	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1000
1448	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1001
1449	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1008
1450	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1009
1451	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1010
1452	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1011
1453	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1012
1454	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1014
1455	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1015
1456	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1016
1457	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	1017
1458	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2000
1459	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2001
1460	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2002
1461	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2003
1462	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2004
1463	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2005
1464	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2006
1465	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2007
1466	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2008
1467	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP	998795	2009







	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1426			212							
1427			216							
1428			212							
1429			216							
1430			216							
1431			216							
1432			216							
1433			216							
1434			216							
1435			216							
1436			216							
1437			216							
1438			216							
1439			216							
1440			204							
1441			100							
1442			100							
1443			100							
1444			200							
1445			100							
1446			100							
1447			328	330	324	336				
1448			328							
1449			100							
1450			100							
1451			100							
1452			100							
1453			336							
1454			200							
1455			200							
1456			100							
1457			328							
1458			216							
1459			118							
1460			338							
1461			118							
1462			118							
1463			118							
1464			118							
1465			118							
1466			118							
1467			118							

		A	B	C	D
1468	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP		998795	2010
1469	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP		998795	2011
1470	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP		998795	2012
1471	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP		998795	2013
1472	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP		998795	2014
1473	MI0006100	CITY OF SOUTH HAVEN, SOUTH HAVEN/CASCO TOWNSHIP WATER AND SEWER AUTHORITY, COVERT TOWNSHIP		998795	3000
1474	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1000
1475	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1001
1476	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1002
1477	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1003
1478	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1004
1479	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1005
1480	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1006
1481	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1008
1482	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1010
1483	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1011
1484	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1012
1485	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1013
1486	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1014
1487	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1015
1488	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1016
1489	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1017
1490	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1018
1491	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1019
1492	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	1020
1493	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2000
1494	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2001
1495	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2002
1496	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2003
1497	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2004
1498	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2005
1499	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	2006
1500	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3000
1501	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3002
1502	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3003
1503	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3004
1504	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3005
1505	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3006
1506	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3007
1507	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3008
1508	MI0006150	SOUTHEASTERN OAKLAND CO W AUTH		244464	3009
1509	MI0006280	ST. CLAIR SHORES		0	1000



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1468																		
1469																		
1470																		
1471																		
1472		R	C								8	99879			1/1/1900 0:00	10		
1473		R	F	4A							0.625		5208		1/1/1900 0:00	10		
1474		H	C	1B						5			1		1/1/1900 0:00	20		
1475		H	C	1B						1			1		1/1/1900 0:00	20		
1476		H	C	1B						2.5			1		1/1/1900 0:00	20		
1477		H	F	1B						7.5			1		1/1/1900 0:00	20		
1478		H	F	1B						10			1		1/1/1900 0:00	20		
1479		H	F	1B						1			1		1/1/1900 0:00	20		
1480		H	F	1B						1			1		1/1/1900 0:00	20		
1481		H	C	1B						4.5			1		1/1/1900 0:00	20		
1482		H	F	1B						53.2			1		1/1/1900 0:00	20		
1483		H	F	1B						55.5			1		1/1/1900 0:00	20		
1484		H	F	1B						30.2			1		1/1/1900 0:00	20		
1485		H	F	1B						31.3			1		1/1/1900 0:00	20		
1486		H	F	1B						22.1			1		1/1/1900 0:00	20		
1487		H	F	1B						20.1			1		1/1/1900 0:00	20		
1488		H	F	1B						71.9			1		1/1/1900 0:00	20		
1489		R	F	4A									1		1/1/1900 0:00	10		
1490																		
1491		R	F	4A						250			1		1/1/1900 0:00	10	6	
1492		R	F	4A						500			1		1/1/1900 0:00	6	10	
1493																		
1494																		
1495		R	F								16	5100			1/1/1900 0:00	6	10	
1496		R	F								16	1600			1/1/1900 0:00	6	10	
1497		R	F								16	5300			1/1/1900 0:00	10	6	
1498		R	F								16	1300			1/1/1900 0:00	10	6	
1499		R	F								16	12946			1/1/1900 0:00	10	6	
1500		R	F								12		1		1/1/1900 0:00	20		
1501		R	C	4A							12		2		1/1/1900 0:00	20		
1502		R	C	4A							12		1		1/1/1900 0:00	20		
1503		R	F	4A							30		1		1/1/1900 0:00	20		
1504		R	F	4A							36		1		1/1/1900 0:00	20		
1505		R	F	4A							20		1		1/1/1900 0:00	20		
1506		R	F	4A							30		1		1/1/1900 0:00	20		
1507		R	F	4A							30		1		1/1/1900 0:00	20		
1508		R	F	4A							16		1		1/1/1900 0:00	20		
1509		N	C	2B		2G				312			1	228411	8/1/2010 0:00	4	11	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1468			118							
1469			118							
1470			118							
1471			216							
1472			100							
1473			100							
1474			100							
1475			326	320						
1476			100							
1477			100							
1478			100							
1479			100							
1480			100							
1481			100							
1482			100							
1483			100							
1484			100							
1485			100							
1486			100							
1487			100							
1488			100							
1489			100							
1490			262							
1491			100							
1492			100							
1493			254							
1494			254							
1495			100							
1496			100							
1497			100							
1498			100							
1499			334	292						
1500			100							
1501			100							
1502			100							
1503			328							
1504			100							
1505			100							
1506			100							
1507			100							
1508			100							
1509			336							

		B			C		D	
		A						
1510	MI0006280	ST. CLAIR SHORES			0		1001	
1511	MI0006280	ST. CLAIR SHORES			0		1002	
1512	MI0006280	ST. CLAIR SHORES			0		1003	
1513	MI0006280	ST. CLAIR SHORES			0		1004	
1514	MI0006280	ST. CLAIR SHORES			0		1005	
1515	MI0006280	ST. CLAIR SHORES			0		1006	
1516	MI0006280	ST. CLAIR SHORES			0		1007	
1517	MI0006280	ST. CLAIR SHORES			0		1008	
1518	MI0006280	ST. CLAIR SHORES			0		1009	
1519	MI0006280	ST. CLAIR SHORES			0		1010	
1520	MI0006280	ST. CLAIR SHORES			0		2000	
1521	MI0006280	ST. CLAIR SHORES			0		2001	
1522	MI0006280	ST. CLAIR SHORES			0		2002	
1523	MI0006280	ST. CLAIR SHORES			0		2003	
1524	MI0006280	ST. CLAIR SHORES			0		2004	
1525	MI0006280	ST. CLAIR SHORES			0		2005	
1526	MI0006280	ST. CLAIR SHORES			0		2006	
1527	MI0006280	ST. CLAIR SHORES			0		2007	
1528	MI0006280	ST. CLAIR SHORES			0		2008	
1529	MI0006280	ST. CLAIR SHORES			0		2009	
1530	MI0006280	ST. CLAIR SHORES			0		2010	
1531	MI0006280	ST. CLAIR SHORES			0		2011	
1532	MI0006280	ST. CLAIR SHORES			0		2012	
1533	MI0006280	ST. CLAIR SHORES			0		2013	
1534	MI0006280	ST. CLAIR SHORES			0		2014	
1535	MI0006280	ST. CLAIR SHORES			0		2015	
1536	MI0006280	ST. CLAIR SHORES			0		2016	
1537	MI0006280	ST. CLAIR SHORES			0		2017	
1538	MI0006280	ST. CLAIR SHORES			0		2018	
1539	MI0006280	ST. CLAIR SHORES			0		2019	
1540	MI0006280	ST. CLAIR SHORES			0		2020	
1541	MI0006280	ST. CLAIR SHORES			0		2021	
1542	MI0006280	ST. CLAIR SHORES			0		2022	
1543	MI0006280	ST. CLAIR SHORES			0		2023	
1544	MI0006280	ST. CLAIR SHORES			0		2024	
1545	MI0006280	ST. CLAIR SHORES			0		2025	
1546	MI0006280	ST. CLAIR SHORES			0		2026	
1547	MI0006280	ST. CLAIR SHORES			0		2027	
1548	MI0006280	ST. CLAIR SHORES			0		2028	
1549	MI0006280	ST. CLAIR SHORES			0		2029	
1550	MI0006280	ST. CLAIR SHORES			0		2030	
1551	MI0006280	ST. CLAIR SHORES			0		2031	





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1510			N	C	2E	2D	2G			30				1	95804	3/1/2011 0:00	8	11
1511			N	C	2D	2G	2E			24				1	81209	3/1/2011 0:00	8	11
1512			N	C	2E	2G	2D			24				1	61100	3/1/2011 0:00	8	11
1513			N	C	2E	2G	2D			8				1	81209	3/1/2011 0:00	11	8
1514			H	C	4A					4				1		1/1/1900 0:00	11	
1515			R	C	4A					18				1		1/1/1900 0:00	11	
1516			R	C	4A					24				1		1/1/1900 0:00	11	
1517			N	C	4A					24				1		1/1/1900 0:00	11	
1518			R	C	4A					1.3				1		1/1/1900 0:00	11	
1519			R	C	4A					3.2				3		1/1/1900 0:00	11	
1520			R	C	4A						12	3300			729810	3/1/2010 0:00	2	4
1521			R	C	4A						8	2357			547560	3/1/2010 0:00	4	2
1522			R	C	4A						6	3958			590040	3/1/2010 0:00	2	4
1523			R	C	4A						8	4154			822660	3/1/2010 0:00	2	4
1524			R	C	4A						8	2749			560720	3/1/2010 0:00	4	2
1525			R	C	4A						8	4251			828980	3/1/2010 0:00	2	4
1526			R	C	4A						8	2818			539190	3/1/2010 0:00	2	4
1527			R	C	4A						8	2384			494350	3/1/2010 0:00	4	2
1528			R	C	4A						8	2805				1/1/1900 0:00	1	
1529			R	C	4A						8	4328				1/1/1900 0:00	1	
1530			R	C	4A						8	2463				1/1/1900 0:00	1	
1531			R	C	4A						8	2361				1/1/1900 0:00	1	
1532			R	C	4A						8	2636				1/1/1900 0:00	1	
1533			R	C	4A						8	1230				1/1/1900 0:00	1	
1534			R	C	4A						8	2487				1/1/1900 0:00	1	
1535			R	C	4A						8	2233				1/1/1900 0:00	1	
1536			R	C	4A						8	2423				1/1/1900 0:00	1	
1537			R	C	4A						8	2785				1/1/1900 0:00	1	
1538			N	C	2B						12	300			216200	4/1/2007 0:00	1	4
1539			N	C	2B						8	140			30000	4/1/2007 0:00	4	1
1540			N	C	2B						8	1020			215000	4/1/2007 0:00	4	1
1541			N	C	2B						8	340			72000	4/1/2007 0:00	4	1
1542			N	C	2B						8	205			45000	4/1/2007 0:00	4	1
1543			N	C	2B						8	270			57900	4/1/2007 0:00	1	4
1544			N	C	2B						8	405			115500	4/1/2007 0:00	1	4
1545			N	C	2B						8	1360			286500	4/1/2007 0:00	1	4
1546			N	C	2B						8	610			129000	4/1/2007 0:00	4	1
1547			N	C	2B						8	285			61000	4/1/2007 0:00	1	4
1548			N	C	2B						8	42			13200	4/1/2007 0:00	4	1
1549			N	C	2B						8	80			19500	4/1/2007 0:00	4	1
1550			N	C	2B						8	625			132000	4/1/2007 0:00	4	1
1551			R	C	4A						8	29522				1/1/1900 0:00	11	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1510			336							
1511			336							
1512			336							
1513			336							
1514			100							
1515			100							
1516			100							
1517			100							
1518			400	200						
1519			400	200						
1520			100							
1521			100							
1522			100							
1523			100							
1524			100							
1525			100							
1526			100							
1527			100							
1528			100							
1529			100							
1530			100							
1531			100							
1532			100							
1533			100							
1534			100							
1535			100							
1536			100							
1537			100							
1538			100							
1539			100							
1540			100							
1541			100							
1542			100							
1543			100							
1544			100							
1545			100							
1546			100							
1547			100							
1548			100							
1549			100							
1550			100							
1551			190							

	A	B	C	D
1552	MI0006280	ST. CLAIR SHORES	0	2032
1553	MI0006280	ST. CLAIR SHORES	0	3000
1554	MI0006280	ST. CLAIR SHORES	0	3001
1555	MI0006280	ST. CLAIR SHORES	0	3002
1556	MI0006280	ST. CLAIR SHORES	0	3003
1557	MI0006280	ST. CLAIR SHORES	0	3004
1558	MI0006280	ST. CLAIR SHORES	0	3005
1559	MI0006280	ST. CLAIR SHORES	0	3006
1560	MI0006280	ST. CLAIR SHORES	0	3007
1561	MI0006280	ST. CLAIR SHORES	0	3008
1562	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	1000
1563	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	1001
1564	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	1002
1565	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	1003
1566	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	1004
1567	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	1005
1568	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2000
1569	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2001
1570	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2002
1571	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2003
1572	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2004
1573	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2005
1574	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2006
1575	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2007
1576	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2008
1577	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2009
1578	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2010
1579	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2011
1580	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2012
1581	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2013
1582	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2014
1583	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2015
1584	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2016
1585	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2017
1586	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2018
1587	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	2019
1588	MI0006284	ST. CLAIR WATER AND SEWER AUTHORITY	211200	3000
1589	MI0006310	ST JOSEPH	294631	1000
1590	MI0006310	ST JOSEPH	294631	1001
1591	MI0006310	ST JOSEPH	294631	1002
1592	MI0006310	ST JOSEPH	294631	1003
1593	MI0006310	ST JOSEPH	294631	1004



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1552			R	C	4A						8	29775			1/1/1900 0:00	11		
1553			R	C	4A	2D					0.625		21906		1/1/1900 0:00	1		
1554			R	C	2D	4A					0.75		2776		1/1/1900 0:00	1		
1555			R	C	4A	2D					1		167		1/1/1900 0:00	1		
1556			R	C	2D	4A					1.5		344		1/1/1900 0:00	1		
1557			R	C	4A	2D					2		312		1/1/1900 0:00	1		
1558			R	C	4A	2D					3		58		1/1/1900 0:00	1		
1559			R	C	2D	4A					4		15		1/1/1900 0:00	1		
1560			R	C	4A	2D					6		3		1/1/1900 0:00	1		
1561			R	C	1D								690		1/1/1900 0:00	11		
1562			H	F	4A					2.7			1		1/1/1900 0:00	10	9	
1563			H	F	4A					0.5			1		1/1/1900 0:00	11	6	
1564			H	F	4A					0.3			1		1/1/1900 0:00	11	6	
1565			N	F	1F					0.3			1		1/1/1900 0:00	10		
1566			N	F	1F					0.5			1		1/1/1900 0:00	10		
1567			R	F	4A					600			1		1/1/1900 0:00	10		
1568			R	C							8	390			1/1/1900 0:00	11	8	
1569			N	C							8	360			1/1/1900 0:00	8	11	
1570			R	C							8	430			1/1/1900 0:00	11	8	
1571			R	C							8	510			1/1/1900 0:00	8	11	
1572			R	C							8	580			1/1/1900 0:00	8	11	
1573			R	C							8	1190			1/1/1900 0:00	11	8	
1574			R	C							8	370			1/1/1900 0:00	11	8	
1575			R	C							8	1850			1/1/1900 0:00	8	11	
1576			R	C							8	410			1/1/1900 0:00	11	8	
1577			R	C							8	320			1/1/1900 0:00	8	11	
1578			R	C							8	750			1/1/1900 0:00	11	8	
1579			N	F							8	320			1/1/1900 0:00	8	11	
1580			N	C							8	800			1/1/1900 0:00	11	8	
1581			R	C							8	930			1/1/1900 0:00	8	11	
1582			R	C							8	1330			1/1/1900 0:00	11	8	
1583			R	C							8	710			1/1/1900 0:00	8	11	
1584			N	C							8	600			1/1/1900 0:00	11	8	
1585			N	C							12	3250			1/1/1900 0:00	8	11	
1586			N	C							12	13130			1/1/1900 0:00	11	8	
1587			R	C							8	12680			1/1/1900 0:00	10		
1588			R	F	4A						0.625		2022		1/1/1900 0:00	10		
1589			H	C	1F					20			1	9341986	4/1/2007 0:00	6	2	10
1590			H	C	4A					20			1	490050	2/1/2011 0:00	10	4	
1591			H	C	4A					1.5			1		1/1/1900 0:00	10		
1592			R	C	4A					800			1		1/1/1900 0:00	10		
1593			R	C	4A					500			1		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1552			190							
1553			100							
1554			100							
1555			100							
1556			100							
1557			100							
1558			100							
1559			100							
1560			100							
1561			100							
1562			308							
1563			100							
1564			100							
1565			326	304	328					
1566			328	326	304					
1567			100							
1568			100							
1569			100							
1570			100							
1571			100							
1572			100							
1573			100							
1574			100							
1575			100							
1576			100							
1577			100							
1578			100							
1579			100							
1580			100							
1581			100							
1582			100							
1583			100							
1584			100							
1585			100							
1586			100							
1587			190							
1588			100							
1589			328							
1590			348							
1591			100							
1592			326							
1593			326							

	A	B	C	D
1594	MI0006310	ST JOSEPH	294631	2000
1595	MI0006310	ST JOSEPH	294631	2001
1596	MI0006310	ST JOSEPH	294631	2002
1597	MI0006310	ST JOSEPH	294631	2003
1598	MI0006310	ST JOSEPH	294631	2004
1599	MI0006310	ST JOSEPH	294631	2005
1600	MI0006310	ST JOSEPH	294631	2006
1601	MI0006310	ST JOSEPH	294631	2007
1602	MI0006310	ST JOSEPH	294631	2008
1603	MI0006310	ST JOSEPH	294631	2009
1604	MI0006310	ST JOSEPH	294631	2010
1605	MI0006310	ST JOSEPH	294631	2011
1606	MI0006310	ST JOSEPH	294631	2012
1607	MI0006310	ST JOSEPH	294631	2013
1608	MI0006310	ST JOSEPH	294631	2014
1609	MI0006310	ST JOSEPH	294631	2015
1610	MI0006310	ST JOSEPH	294631	2016
1611	MI0006310	ST JOSEPH	294631	2017
1612	MI0006310	ST JOSEPH	294631	2018
1613	MI0006310	ST JOSEPH	294631	3000
1614	MI0006385	STERLING HEIGHTS	3199680	1000
1615	MI0006385	STERLING HEIGHTS	3199680	1001
1616	MI0006385	STERLING HEIGHTS	3199680	1002
1617	MI0006385	STERLING HEIGHTS	3199680	2003
1618	MI0006385	STERLING HEIGHTS	3199680	2004
1619	MI0006385	STERLING HEIGHTS	3199680	2006
1620	MI0006385	STERLING HEIGHTS	3199680	2007
1621	MI0006385	STERLING HEIGHTS	3199680	2008
1622	MI0006385	STERLING HEIGHTS	3199680	2009
1623	MI0006385	STERLING HEIGHTS	3199680	2010
1624	MI0006385	STERLING HEIGHTS	3199680	2011
1625	MI0006385	STERLING HEIGHTS	3199680	2012
1626	MI0006385	STERLING HEIGHTS	3199680	2013
1627	MI0006385	STERLING HEIGHTS	3199680	3001
1628	MI0006385	STERLING HEIGHTS	3199680	3003
1629	MI0006385	STERLING HEIGHTS	3199680	3004
1630	MI0006385	STERLING HEIGHTS	3199680	3005
1631	MI0006545	TAYLOR	1573440	1000
1632	MI0006545	TAYLOR	1573440	1001
1633	MI0006545	TAYLOR	1573440	2000
1634	MI0006545	TAYLOR	1573440	2001
1635	MI0006545	TAYLOR	1573440	3000





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1594			R	C	4A						8	23585			1/1/1900 0:00	11		
1595																		
1596																		
1597																		
1598																		
1599																		
1600																		
1601																		
1602																		
1603																		
1604																		
1605																		
1606																		
1607																		
1608																		
1609																		
1610																		
1611																		
1612																		
1613		R	C	2D							0.625		3754		1/1/1900 0:00	11		
1614		H	F	4A						14.4			1		1/1/1900 0:00	10		
1615		R	F	4A						300			1		1/1/1900 0:00	10	20	
1616																		
1617																		
1618		N	C	4A							16	10500		2384500	5/1/2006 0:00	1	20	
1619		N	C								24	13200		1500000	5/1/2006 0:00	20	1	
1620		N	C								16	6900		950000	5/1/2006 0:00	1	20	
1621		N	C								16	4900		700000	5/1/2006 0:00	20	1	
1622		N	C								16	6900		950000	5/1/2006 0:00	20	1	
1623		N	C	4A							16	3500		575000	5/1/2006 0:00	1	20	
1624		R	C	4A							8	31995			1/1/1900 0:00	10	20	
1625		R	C	4A							8	287970			1/1/1900 0:00	10	20	
1626		N	C								8	500		60000	2/1/2010 0:00	1		
1627		R	C	4A							0.75		8000		1/1/1900 0:00	20	10	
1628		R	F	4A							0.75		31400		1/1/1900 0:00	20	10	
1629																		
1630																		
1631		N	C	4A						1.65			1	1155661	11/1/2009 0:00	10	1	
1632		N	C	4A						4.464			1	314763	11/1/2009 0:00	10	1	
1633		R	C	4A							8	157340			1/1/1900 0:00	10		
1634		N	C	2A							8	27220		5062700	11/1/2009 0:00	1	10	
1635		R	F	4A							0.625		20622		1/1/1900 0:00	6	10	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1594			308	288	340					
1595			118							
1596			118							
1597			118							
1598			118							
1599			118							
1600			118							
1601			118							
1602			118							
1603			118							
1604			118							
1605			118							
1606			118							
1607			118							
1608			118							
1609			118							
1610			118							
1611			118							
1612			118							
1613			308	340						
1614			100							
1615			326							
1616			212							
1617			122	118	420					
1618			100							
1619			100							
1620			100							
1621			100							
1622			100							
1623			100							
1624			100							
1625			344							
1626			100							
1627			100							
1628			100							
1629			154	262						
1630			180							
1631			290	336						
1632			336							
1633			324							
1634			100							
1635			324	334	340					

B				C	D
A					
1636	MI0006545	TAYLOR		1573440	3001
1637	MI0006545	TAYLOR		1573440	3002
1638	MI0006545	TAYLOR		1573440	3003
1639	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1000
1640	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1001
1641	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1002
1642	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1003
1643	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1004
1644	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1005
1645	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1006
1646	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1007
1647	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1008
1648	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1009
1649	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1010
1650	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1011
1651	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1012
1652	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1013
1653	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1014
1654	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1015
1655	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1016
1656	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1017
1657	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1018
1658	MI0006725	CHARTER TOWNSHIP OF UNION		288763	1019
1659	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2000
1660	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2001
1661	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2002
1662	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2003
1663	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2004
1664	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2005
1665	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2006
1666	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2007
1667	MI0006725	CHARTER TOWNSHIP OF UNION		288763	2008
1668	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3000
1669	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3001
1670	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3002
1671	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3003
1672	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3004
1673	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3005
1674	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3006
1675	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3007
1676	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3008
1677	MI0006725	CHARTER TOWNSHIP OF UNION		288763	3009



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1636			R	C	1D								840		1/1/1900 0:00	6	10	
1637			N	C	4A								5	1836450	11/1/2009 0:00	10	1	
1638																		
1639			R	F						0.594			1		1/1/1900 0:00	11		
1640			R	F						0.579			1		1/1/1900 0:00	11		
1641			R	F						0.548			1		1/1/1900 0:00	11		
1642			R	F						0.548			1		1/1/1900 0:00	11		
1643			R	C						0.594			1		1/1/1900 0:00	11		
1644			R	C						0.533			1		1/1/1900 0:00	11		
1645			R	F						1.008			1		1/1/1900 0:00	11		
1646			R	F						125			1		1/1/1900 0:00	11		
1647			R	F						125			1		1/1/1900 0:00	11		
1648			R	F						200			1		1/1/1900 0:00	11		
1649			N	F						1.4			1	152650	9/1/2009 0:00	11	2	
1650			H	F						0.2			1		1/1/1900 0:00	11		
1651			H	F						0.5			1		1/1/1900 0:00	11		
1652			H	F						0.2			1		1/1/1900 0:00	11		
1653			H	F						0.5			1		1/1/1900 0:00	11		
1654			H	F	2A					2.016			1		1/1/1900 0:00	11		
1655			H	F	2A					1.15			1		1/1/1900 0:00	11		
1656			H	F	2A					1.15			1		1/1/1900 0:00	11		
1657			R	F	1A					12			1		1/1/1900 0:00	11		
1658			R	F						350			1		1/1/1900 0:00	11		
1659																		
1660																		
1661																		
1662			R	F							12	12879			1/1/1900 0:00	11		
1663			R	F							8	13946			1/1/1900 0:00	11		
1664			R	F							10	366			1/1/1900 0:00	11		
1665																		
1666																		
1667			R	F							6	1683			1/1/1900 0:00	11		
1668			R	F							12		1		1/1/1900 0:00	11		
1669			R	F							8		1		1/1/1900 0:00	11		
1670			R	F							8		1		1/1/1900 0:00	11		
1671			N	F							8		1		1/1/1900 0:00	11		
1672																		
1673			R	F							0.625		1471		1/1/1900 0:00	11		
1674			R	F							1		190		1/1/1900 0:00	11		
1675			R	F							1.5		14		1/1/1900 0:00	11		
1676			R	F							2		156		1/1/1900 0:00	11		
1677			R	F							3		6		1/1/1900 0:00	11		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1636			324							
1637			336							
1638			254							
1639			244							
1640			244							
1641			244							
1642			244							
1643			244							
1644			244							
1645			244							
1646			100							
1647			100							
1648			100							
1649			340	336	324					
1650			100							
1651			100							
1652			100							
1653			100							
1654			334							
1655			334							
1656			334							
1657			334							
1658			328							
1659			216							
1660			216							
1661			216							
1662			100							
1663			100							
1664			100							
1665			212							
1666			212							
1667			100							
1668			100							
1669			100							
1670			100							
1671			100							
1672			262							
1673			100							
1674			100							
1675			100							
1676			100							
1677			100							

	A	B	C	D
1678	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3010
1679	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3011
1680	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3012
1681	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3013
1682	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3014
1683	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3015
1684	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3016
1685	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3017
1686	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3018
1687	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3019
1688	MI0006725	CHARTER TOWNSHIP OF UNION	288763	3020
1689	MI0006900	WARREN, CITY OF	2880877	1000
1690	MI0006900	WARREN, CITY OF	2880877	1001
1691	MI0006900	WARREN, CITY OF	2880877	2000
1692	MI0006900	WARREN, CITY OF	2880877	2001
1693	MI0006900	WARREN, CITY OF	2880877	2002
1694	MI0006900	WARREN, CITY OF	2880877	2003
1695	MI0006900	WARREN, CITY OF	2880877	2004
1696	MI0006900	WARREN, CITY OF	2880877	2005
1697	MI0006900	WARREN, CITY OF	2880877	2006
1698	MI0006900	WARREN, CITY OF	2880877	2007
1699	MI0006900	WARREN, CITY OF	2880877	2008
1700	MI0006900	WARREN, CITY OF	2880877	3000
1701	MI0006900	WARREN, CITY OF	2880877	3001
1702	MI0006900	WARREN, CITY OF	2880877	3002
1703	MI0006900	WARREN, CITY OF	2880877	3003
1704	MI0006900	WARREN, CITY OF	2880877	3004
1705	MI0006900	WARREN, CITY OF	2880877	3005
1706	MI0006900	WARREN, CITY OF	2880877	3006
1707	MI0006900	WARREN, CITY OF	2880877	3007
1708	MI0006900	WARREN, CITY OF	2880877	3008
1709	MI0006900	WARREN, CITY OF	2880877	3009
1710	MI0006900	WARREN, CITY OF	2880877	3010
1711	MI0006910	WATERFORD TOWNSHIP	1940928	1001
1712	MI0006910	WATERFORD TOWNSHIP	1940928	1002
1713	MI0006910	WATERFORD TOWNSHIP	1940928	1003
1714	MI0006910	WATERFORD TOWNSHIP	1940928	1004
1715	MI0006910	WATERFORD TOWNSHIP	1940928	1005
1716	MI0006910	WATERFORD TOWNSHIP	1940928	1006
1717	MI0006910	WATERFORD TOWNSHIP	1940928	1007
1718	MI0006910	WATERFORD TOWNSHIP	1940928	1008
1719	MI0006910	WATERFORD TOWNSHIP	1940928	1009





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1678			R	F							4		4		1/1/1900 0:00	11		
1679			R	F							6		1		1/1/1900 0:00	11		
1680			R	F							8		8		1/1/1900 0:00	11		
1681			R	F							10		1		1/1/1900 0:00	11		
1682																		
1683																		
1684																		
1685		R	F								2		1		1/1/1900 0:00	11		
1686		R	F								2		1		1/1/1900 0:00	11		
1687		R	F								2		1		1/1/1900 0:00	11		
1688																		
1689																		
1690																		
1691		R	C	4A							8	29418			1/1/1900 0:00	10		
1692		R	C	4A							8	194817			1/1/1900 0:00	10		
1693		R	C	4A							10	1647			1/1/1900 0:00	10		
1694		R	C	4A							12	49195			1/1/1900 0:00	10		
1695		R	C	4A							16	13011			1/1/1900 0:00	10		
1696																		
1697																		
1698																		
1699																		
1700		N	C	2D							12		1	225617	11/1/2006 0:00	4	10	2
1701		N	C	2D							24		1	512167	11/1/2006 0:00	4	2	10
1702		N	C	2D							24		1	491545	11/1/2006 0:00	4	2	10
1703		N	C	2D							42		1	811943	11/1/2006 0:00	4	2	10
1704		N	C	2D							8		1		1/1/1900 0:00	2	10	
1705		R	C	2D							0.625		44270		1/1/1900 0:00	10	20	
1706		R	C	2D							0.75		15		1/1/1900 0:00	10	20	
1707		R	C	2D							1		3700		1/1/1900 0:00	20	10	
1708		R	C	2D							1.5		1000		1/1/1900 0:00	20	10	
1709		R	C	2D							2		850		1/1/1900 0:00	20	10	
1710		R	C	1D							1		529		1/1/1900 0:00	10		
1711		R	F	4A						1.4			4		1/1/1900 0:00	10		
1712		R	F	4A						2.2			4		1/1/1900 0:00	10		
1713		R	F	4A						2.6			2		1/1/1900 0:00	10		
1714		R	F	4A						1.4			1		1/1/1900 0:00	10		
1715		R	F	4A						0.74			1		1/1/1900 0:00	10		
1716		R	F	4A						0.98			1		1/1/1900 0:00	10		
1717		R	F	4A						1.2			1		1/1/1900 0:00	10		
1718		H	F	4A						3.5			1		1/1/1900 0:00	10		
1719		H	F	4A						0.98			1		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1678			100							
1679			100							
1680			100							
1681			100							
1682			262	218						
1683			216							
1684			216							
1685			100							
1686			100							
1687			340							
1688			216							
1689			212							
1690			212							
1691			100							
1692			100							
1693			100							
1694			100							
1695			190							
1696			188							
1697			188							
1698			188							
1699			188							
1700			324							
1701			324							
1702			324							
1703			324							
1704			324							
1705			100							
1706			100							
1707			100							
1708			100							
1709			100							
1710			100							
1711			244							
1712			244							
1713			244							
1714			244							
1715			244							
1716			244							
1717			244							
1718			244							
1719			244							

B				C	D
A					
1720	MI0006910	WATERFORD TOWNSHIP		1940928	1010
1721	MI0006910	WATERFORD TOWNSHIP		1940928	1011
1722	MI0006910	WATERFORD TOWNSHIP		1940928	1012
1723	MI0006910	WATERFORD TOWNSHIP		1940928	1026
1724	MI0006910	WATERFORD TOWNSHIP		1940928	1027
1725	MI0006910	WATERFORD TOWNSHIP		1940928	1028
1726	MI0006910	WATERFORD TOWNSHIP		1940928	1029
1727	MI0006910	WATERFORD TOWNSHIP		1940928	1030
1728	MI0006910	WATERFORD TOWNSHIP		1940928	1032
1729	MI0006910	WATERFORD TOWNSHIP		1940928	1033
1730	MI0006910	WATERFORD TOWNSHIP		1940928	1034
1731	MI0006910	WATERFORD TOWNSHIP		1940928	1035
1732	MI0006910	WATERFORD TOWNSHIP		1940928	1036
1733	MI0006910	WATERFORD TOWNSHIP		1940928	1037
1734	MI0006910	WATERFORD TOWNSHIP		1940928	1038
1735	MI0006910	WATERFORD TOWNSHIP		1940928	1039
1736	MI0006910	WATERFORD TOWNSHIP		1940928	1040
1737	MI0006910	WATERFORD TOWNSHIP		1940928	1041
1738	MI0006910	WATERFORD TOWNSHIP		1940928	1042
1739	MI0006910	WATERFORD TOWNSHIP		1940928	1043
1740	MI0006910	WATERFORD TOWNSHIP		1940928	1044
1741	MI0006910	WATERFORD TOWNSHIP		1940928	1045
1742	MI0006910	WATERFORD TOWNSHIP		1940928	1046
1743	MI0006910	WATERFORD TOWNSHIP		1940928	1047
1744	MI0006910	WATERFORD TOWNSHIP		1940928	1048
1745	MI0006910	WATERFORD TOWNSHIP		1940928	2000
1746	MI0006910	WATERFORD TOWNSHIP		1940928	2001
1747	MI0006910	WATERFORD TOWNSHIP		1940928	2002
1748	MI0006910	WATERFORD TOWNSHIP		1940928	2003
1749	MI0006910	WATERFORD TOWNSHIP		1940928	2004
1750	MI0006910	WATERFORD TOWNSHIP		1940928	2007
1751	MI0006910	WATERFORD TOWNSHIP		1940928	3000
1752	MI0006910	WATERFORD TOWNSHIP		1940928	3001
1753	MI0006910	WATERFORD TOWNSHIP		1940928	3002
1754	MI0007120	WILLIAMSTON, CITY OF		179250	1000
1755	MI0007120	WILLIAMSTON, CITY OF		179250	1001
1756	MI0007120	WILLIAMSTON, CITY OF		179250	1002
1757	MI0007120	WILLIAMSTON, CITY OF		179250	1003
1758	MI0007120	WILLIAMSTON, CITY OF		179250	1004
1759	MI0007120	WILLIAMSTON, CITY OF		179250	1005
1760	MI0007120	WILLIAMSTON, CITY OF		179250	1006
1761	MI0007120	WILLIAMSTON, CITY OF		179250	1007



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1720			H	F	4A					2.1			1		1/1/1900 0:00	10		
1721			H	F	4A					3			1		1/1/1900 0:00	10		
1722			H	F	4A					1.3			1		1/1/1900 0:00	10		
1723			H	C	4A					1.5			1	750000	1/1/2009 0:00	10	4	1
1724			H	C	4A					0.75			1	625000	1/1/2009 0:00	10	4	1
1725																		
1726			H	F	4A					9.3			1		1/1/1900 0:00	10		
1727			H	F	4A					0.6			1		1/1/1900 0:00	10		
1728			N	C	4A					1			2	393750	1/1/2009 0:00	1	10	
1729			N	C	4A					1			1		1/1/1900 0:00	10	20	
1730			H	C	4A					2			1	2125000	1/1/2009 0:00	10	1	
1731			R	C	4A					6			1	1287500	1/1/2009 0:00	10	1	
1732			H	F						2.5			5		1/1/1900 0:00	10	11	
1733			H	F						1.7			3		1/1/1900 0:00	10	11	
1734			H	F						3.5			1		1/1/1900 0:00	10	11	
1735			H	F						1.4			1		1/1/1900 0:00	10	11	
1736			H	F						5.3			1		1/1/1900 0:00	11	10	
1737			R	F						500			1		1/1/1900 0:00	10		
1738			R	F						300			1		1/1/1900 0:00	10		
1739			R	F						500			1		1/1/1900 0:00	10		
1740			R	F						450			1		1/1/1900 0:00	10		
1741			R	F						500			1		1/1/1900 0:00	10		
1742			R	F						250			1		1/1/1900 0:00	10		
1743			R	F						200			1		1/1/1900 0:00	10		
1744			R	F						350			1		1/1/1900 0:00	10		
1745																		
1746																		
1747																		
1748																		
1749																		
1750			H	C										45920000	1/1/2009 0:00	1		
1751			R	C	1D							224000	100		1/1/1900 0:00	10		
1752			R	F	4A						0.625		24350	4572443	2/1/2011 0:00	10	9	
1753			R	C	4A								150	1005000	1/1/2009 0:00	10	1	
1754			R	C	4A					0.43			1	150000	11/1/2009 0:00	4		
1755			N	C	1G	2A				1.3			1	2711389	11/1/2009 0:00	4	7	
1756			H	C	4A									600000	11/1/2009 0:00	4		
1757			H	C	4A					0.65			1		1/1/1900 0:00	10		
1758			N	C	2B					150			1	65000	11/1/2009 0:00	10	4	
1759			H	F	4A					0.4			1		1/1/1900 0:00	4		
1760			N	C						0.2			1		1/1/1900 0:00	10		
1761			N	C						0.16			1		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1720			244							
1721			244							
1722			244							
1723			324							
1724			324							
1725			262							
1726			100							
1727			100							
1728			100							
1729			100							
1730			312	218	328					
1731			326							
1732			100							
1733			100							
1734			100							
1735			100							
1736			100							
1737			100							
1738			100							
1739			100							
1740			100							
1741			100							
1742			100							
1743			100							
1744			100							
1745			188							
1746			188							
1747			188							
1748			188							
1749			188							
1750			100							
1751			100							
1752			336	340	338					
1753			100							
1754			328							
1755			100							
1756			332							
1757			244							
1758			100							
1759			244	116						
1760			100							
1761			100							

	A	B	C	D
1762	MI0007120	WILLIAMSTON, CITY OF	179250	2000
1763	MI0007120	WILLIAMSTON, CITY OF	179250	2001
1764	MI0007120	WILLIAMSTON, CITY OF	179250	2002
1765	MI0007120	WILLIAMSTON, CITY OF	179250	2003
1766	MI0007120	WILLIAMSTON, CITY OF	179250	2004
1767	MI0007120	WILLIAMSTON, CITY OF	179250	2005
1768	MI0007120	WILLIAMSTON, CITY OF	179250	2006
1769	MI0007120	WILLIAMSTON, CITY OF	179250	2007
1770	MI0007120	WILLIAMSTON, CITY OF	179250	2008
1771	MI0007120	WILLIAMSTON, CITY OF	179250	2009
1772	MI0007120	WILLIAMSTON, CITY OF	179250	2010
1773	MI0007120	WILLIAMSTON, CITY OF	179250	2011
1774	MI0007120	WILLIAMSTON, CITY OF	179250	2012
1775	MI0007120	WILLIAMSTON, CITY OF	179250	3000
1776	MI0007120	WILLIAMSTON, CITY OF	179250	3001
1777	MI0007120	WILLIAMSTON, CITY OF	179250	3002
1778	MI0007120	WILLIAMSTON, CITY OF	179250	3003
1779	MI0007180	WOODHAVEN	237600	2000
1780	MI0007180	WOODHAVEN	237600	2001
1781	MI0007180	WOODHAVEN	237600	2002
1782	MI0007180	WOODHAVEN	237600	3000
1783	MI0007180	WOODHAVEN	237600	3004
1784	MI0007180	WOODHAVEN	237600	3005
1785	MI0007180	WOODHAVEN	237600	3006
1786	MI0007180	WOODHAVEN	237600	3007
1787	MI0007180	WOODHAVEN	237600	3008
1788	MI0007220	WYOMING	1885861	1000
1789	MI0007220	WYOMING	1885861	1001
1790	MI0007220	WYOMING	1885861	1002
1791	MI0007220	WYOMING	1885861	1003
1792	MI0007220	WYOMING	1885861	1004
1793	MI0007220	WYOMING	1885861	1005
1794	MI0007220	WYOMING	1885861	1006
1795	MI0007220	WYOMING	1885861	1007
1796	MI0007220	WYOMING	1885861	1008
1797	MI0007220	WYOMING	1885861	1009
1798	MI0007220	WYOMING	1885861	1010
1799	MI0007220	WYOMING	1885861	1011
1800	MI0007220	WYOMING	1885861	1012
1801	MI0007220	WYOMING	1885861	1013
1802	MI0007220	WYOMING	1885861	1014
1803	MI0007220	WYOMING	1885861	1016







	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1762			100							
1763			100							
1764			100							
1765			100							
1766			118	114						
1767			308							
1768			114	118						
1769			114	118						
1770			308							
1771			308							
1772			114	118						
1773			114	118						
1774			100							
1775			100							
1776			100							
1777			100							
1778			216							
1779			100							
1780			100							
1781			100							
1782			278	308						
1783			100							
1784			100							
1785			280							
1786			280							
1787			280							
1788			100							
1789			100							
1790			100							
1791			100							
1792			100							
1793			100							
1794			100							
1795			100							
1796			100							
1797			100							
1798			100							
1799			100							
1800			100							
1801			100							
1802			100							
1803			114							

	A	B	C	D
1804	MI0007220	WYOMING	1885861	1017
1805	MI0007220	WYOMING	1885861	2000
1806	MI0007220	WYOMING	1885861	2001
1807	MI0007220	WYOMING	1885861	2002
1808	MI0007220	WYOMING	1885861	2003
1809	MI0007220	WYOMING	1885861	2004
1810	MI0007220	WYOMING	1885861	2005
1811	MI0007220	WYOMING	1885861	2006
1812	MI0007220	WYOMING	1885861	2007
1813	MI0007220	WYOMING	1885861	2008
1814	MI0007220	WYOMING	1885861	2009
1815	MI0007220	WYOMING	1885861	2010
1816	MI0007220	WYOMING	1885861	2011
1817	MI0007220	WYOMING	1885861	2012
1818	MI0007220	WYOMING	1885861	3000
1819	MI0007220	WYOMING	1885861	3001
1820	MI0007220	WYOMING	1885861	3002
1821	MI0007220	WYOMING	1885861	3003
1822	MI0007220	WYOMING	1885861	3004
1823	MI0007220	WYOMING	1885861	3005
1824	MI0007220	WYOMING	1885861	3006
1825	MI0007220	WYOMING	1885861	3007
1826	MI0007220	WYOMING	1885861	3008
1827	MI0007220	WYOMING	1885861	3009
1828	MI0007220	WYOMING	1885861	3010
1829	MI0007220	WYOMING	1885861	3011
1830	MI0007220	WYOMING	1885861	3012
1831	MI0007220	WYOMING	1885861	3013
1832	MI0007220	WYOMING	1885861	3014
1833	MI0007220	WYOMING	1885861	3015
1834	MI0007220	WYOMING	1885861	3016
1835	MI0007220	WYOMING	1885861	3017
1836	MI0007220	WYOMING	1885861	3018
1837	MI0007220	WYOMING	1885861	3019
1838	MI0007220	WYOMING	1885861	3020
1839	MI0007220	WYOMING	1885861	3021
1840	MI0007220	WYOMING	1885861	3022
1841	MI0007220	WYOMING	1885861	3023
1842	MI0007220	WYOMING	1885861	3024
1843	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	1000
1844	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	1001
1845	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	1002



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1804																		
1805			N	C							8	450			65000	3/1/2011 0:00	10	1
1806																		
1807																		
1808																		
1809			N	C							16	1700		230000	7/1/2003 0:00	10	1	
1810			N	C							8	300		24000	7/1/2003 0:00	1	10	
1811			N	C							8	850		125000	3/1/2011 0:00	10	1	
1812			N	C							6	350		55000	3/1/2011 0:00	10	1	
1813			N	C							8	1200		96000	7/1/2003 0:00	10	1	
1814			N	C							6	1500		90000	7/1/2003 0:00	10	1	
1815																		
1816			R	C							8	188586			1/1/1900 0:00	20		
1817			N	C	4A						30	24800		2960500	3/1/2009 0:00	3	8	2
1818			R	F							0.625		19595		1/1/1900 0:00	20		
1819			R	F							1		1304		1/1/1900 0:00	20		
1820			R	F							1.5		468		1/1/1900 0:00	20		
1821			R	F							2		448		1/1/1900 0:00	20		
1822			R	F							3		80		1/1/1900 0:00	20		
1823			R	F							4		13		1/1/1900 0:00	20		
1824			R	F							6		13		1/1/1900 0:00	20		
1825			R	F							8		1		1/1/1900 0:00	20		
1826			R	F							1		8		1/1/1900 0:00	10		
1827			R	F							1.25		9		1/1/1900 0:00	10		
1828			R	F							1.5		7		1/1/1900 0:00	10		
1829			R	F							2		38		1/1/1900 0:00	10		
1830			R	F							0.75		1		1/1/1900 0:00	10		
1831			R	F							2.5		3		1/1/1900 0:00	10		
1832			R	F							4		5		1/1/1900 0:00	10		
1833			R	F							0.75		11		1/1/1900 0:00	10		
1834			R	F							1		10		1/1/1900 0:00	10		
1835			R	F							1.25		1		1/1/1900 0:00	10		
1836			R	F							1.5		10		1/1/1900 0:00	10		
1837			R	F							2		29		1/1/1900 0:00	10		
1838			R	F							2.5		2		1/1/1900 0:00	10		
1839			R	F							3		6		1/1/1900 0:00	10		
1840			R	F							4		5		1/1/1900 0:00	10		
1841			R	F							6		4		1/1/1900 0:00	10		
1842			R	F							8		1		1/1/1900 0:00	10		
1843			H	F	4A								1	2502430	3/1/2007 0:00	4	1	
1844																		
1845			H	F	4A					11			1	1217700	3/1/2007 0:00	4	1	

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1804			216							
1805			100							
1806			114							
1807			114							
1808			114							
1809			100							
1810			100							
1811			100							
1812			100							
1813			100							
1814			100							
1815			122							
1816			100							
1817	6		324							
1818			100							
1819			100							
1820			100							
1821			100							
1822			100							
1823			100							
1824			100							
1825			100							
1826			100							
1827			100							
1828			100							
1829			100							
1830			100							
1831			100							
1832			100							
1833			100							
1834			100							
1835			100							
1836			100							
1837			100							
1838			100							
1839			100							
1840			100							
1841			100							
1842			100							
1843			336	348						
1844			162							
1845			100							







	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1846			N	F	4A					5			1	6772275	3/1/2007 0:00	1		4
1847			H	C						4.2			1		1/1/1900 0:00	10		
1848			H	F						2			1		1/1/1900 0:00	10		
1849			H	F						5			2		1/1/1900 0:00	10		
1850			H	F	4A					0.25			1		1/1/1900 0:00	10		
1851			H	F	4A					1			1		1/1/1900 0:00	10		
1852			H	F	4A					3			1		1/1/1900 0:00	10		
1853			H	F	4A					6			1		1/1/1900 0:00	10		
1854			H	F	4A					3			1		1/1/1900 0:00	10		
1855			R	F	4A					175			3		1/1/1900 0:00	10		
1856			R	F	4A					130			1		1/1/1900 0:00	10		
1857			R	F	4A						12	4300		1078650	3/1/2007 0:00	1	4	
1858			R	F	4A						16	5400		1595700	3/1/2007 0:00	1	4	
1859			R	F	4A						16	6300		1846800	3/1/2007 0:00	4	1	
1860			R	F	4A						8	1800		406603	3/1/2007 0:00	1		
1861			R	F	4A						8	4000			1/1/1900 0:00	1		
1862																		
1863		R	F	F	4A						16	7740		2123820	3/1/2007 0:00	1		
1864		H	F	F	4A						24	8600		3836261	3/1/2007 0:00	1		
1865		R	F	F	4A						8	7400		1559535	3/1/2007 0:00	1		
1866		R	F	F	4A						8	3630		540162	3/1/2007 0:00	1		
1867		R	F	F	4A						36	5000		2929500	3/1/2007 0:00	1		
1868		R	F	F	4A						8	5500		1178850	3/1/2007 0:00	1		
1869		R	F	F	4A						16	1460		299376	3/1/2007 0:00	1		
1870		R	F	F	4A						36	5500		3420900	3/1/2007 0:00	1		
1871		R	F	F	4A						24	2640		1525500	3/1/2007 0:00	1		
1872		R	F	F	4A						12	9400		2259900	3/1/2007 0:00	1		
1873		R	F	F	4A						36	3200		1874880	3/1/2007 0:00	1		
1874		R	F	F	4A						8	7400		1527075	3/1/2007 0:00	1		
1875		R	F	F	4A						8	3220		707940	3/1/2007 0:00	1		
1876		R	F	F	4A						16	3370		623220	3/1/2007 0:00	1		
1877		R	F	F	4A						36	2000		1510110	3/1/2007 0:00	1		
1878		R	F	F	4A						8	5500		1178850	3/1/2007 0:00	1		
1879		R	F	F	4A						12	600		326700	3/1/2007 0:00	1		
1880		R	F	F	4A						16	6660		1918080	3/1/2007 0:00	1		
1881		R	F	F	4A						8	5800		1220800	3/1/2007 0:00	1		
1882		R	F	F	4A						8	1450		204120	3/1/2007 0:00	1		
1883		R	F	F	4A						8	5600		1176000	3/1/2007 0:00	1		
1884		R	F	F	4A						16	4830		1384290	3/1/2007 0:00	1		
1885		R	F	F	4A						8	280		71400	3/1/2007 0:00	1		
1886		R	F	F	4A						8	4620		905973	3/1/2007 0:00	1		
1887		H	F	F	4A						24	8400		3558060	3/1/2007 0:00	1		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1846			336							
1847			324	340	308	326				
1848			340	324	308	326				
1849			326	324	308	340				
1850			100							
1851			100							
1852			100							
1853			340							
1854			340							
1855			100							
1856			100							
1857			100							
1858			100							
1859			100							
1860			272							
1861			308							
1862			200							
1863			100							
1864			272							
1865			272							
1866			100							
1867			336							
1868			272							
1869			100							
1870			100							
1871			100							
1872			336							
1873			100							
1874			272							
1875			100							
1876			100							
1877			340							
1878			272							
1879			336	340						
1880			100							
1881			100							
1882			100							
1883			100							
1884			100							
1885			100							
1886			272							
1887			100							





	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1888																		
1889			R	F	4A						16	4500		1231200	3/1/2007 0:00		1	
1890			R	F	4A						8	9560		1851120	3/1/2007 0:00		1	
1891			R	F	4A						8	1260		268920	3/1/2007 0:00		1	
1892			R	F	4A						8	6030		1276560	3/1/2007 0:00		1	
1893			R	F	4A						8	5200		1100400	3/1/2007 0:00		1	
1894			R	F	4A						12	860		230850	3/1/2007 0:00		1	
1895			R	F	4A						8	1950		407700	3/1/2007 0:00		1	
1896			R	F	4A						12	2450		636525	3/1/2007 0:00		1	
1897			R	F	4A						16	2600		761400	3/1/2007 0:00		1	
1898			R	F	4A						8	5000		1047200	3/1/2007 0:00		1	
1899			R	F	4A						16	2700		785700	3/1/2007 0:00		1	
1900			R	F	4A						8	12200		2413800	3/1/2007 0:00		1	
1901			R	F	4A						8	1060		217620	3/1/2007 0:00		1	
1902			R	F	4A						8	1100		223889	3/1/2007 0:00		1	
1903			R	F	4A						8	11475		2208130	3/1/2007 0:00		1	
1904			R	F	4A						8	1800		367200	3/1/2007 0:00		1	
1905			R	F	4A						8	5000		1017900	3/1/2007 0:00		1	
1906			R	F	4A						8	1940		389880	3/1/2007 0:00		1	
1907																		
1908			R	F	4A						8	3000		599400	3/1/2007 0:00		1	
1909			R	F	4A						8	2550		515700	3/1/2007 0:00		1	
1910			R	F	4A						8	5070		964440	3/1/2007 0:00		1	
1911			R	F	4A						8	14600		3005100	3/1/2007 0:00		1	
1912			R	F	4A						8	4960		954720	3/1/2007 0:00		1	
1913			R	F	4A						8	14300		2278433	3/1/2007 0:00		1	
1914			R	F	4A						8	650		137200	3/1/2007 0:00		1	
1915			R	F	4A						8	4590		902880	3/1/2007 0:00		1	
1916			R	F	4A						8	1800		378000	4/1/2009 0:00		1	
1917			R	F	4A						12	2165		485409	3/1/2007 0:00		1	
1918			H	F	4A						16	2200		456603	3/1/2007 0:00		1	
1919			R	F	4A						12	600		106465	3/1/2007 0:00		1	
1920			R	F	4A						12	4700		1218350	3/1/2007 0:00		1	
1921			R	F	4A						12	600		138925	3/1/2007 0:00		1	
1922			R	F	4A						12	4700		1191350	3/1/2007 0:00		1	
1923			R	F	4A						12	570		127992	3/1/2007 0:00		1	
1924			R	F	4A						12	11480		2119171	3/1/2007 0:00		1	
1925			R	F	4A						12	625		74720	3/1/2007 0:00		1	
1926			R	F	4A						12	4000		686167	3/1/2007 0:00		1	
1927			R	C	4A						0.625		19987		1/1/1900 0:00		10	
1928																		
1929																		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1888			216	212						
1889			100							
1890			100							
1891			100							
1892			100							
1893			100							
1894			100							
1895			336							
1896			100							
1897			100							
1898			100							
1899			100							
1900			340							
1901			100							
1902			272							
1903			272							
1904			100							
1905			340	336						
1906			100							
1907			212	216						
1908			340	336						
1909			100							
1910			340							
1911			100							
1912			100							
1913			272							
1914			100							
1915			100							
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1917			280							
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1925			280							
1926			280							
1927			342							
1928			212	200						
1929			212	200						

	A	B	C	D
1930	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3003
1931	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3004
1932	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3005
1933	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3006
1934	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3007
1935	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3008
1936	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3009
1937	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3010
1938	MI0007260	YPSILANTI COMMUNITY UTILITY AUTHORITY	1694880	3011

	E	F	G	H	I	J	K	L	M	N	O	P
1930	WILLOW RUN AIRPORT- MASTER METERS	M8							A1			
1931	EMU-DOUBLE CHECK VALVE 2011	M7							A6			
1932	EMU-DOUBLE CHECK VALVE - 2012	M7							A6			
1933	EMU-DOUBLE CHECK VALVE -2013	M7							A6			
1934	METER REPLACEMENT - 2012-13	M8							A1			
1935	METER RADIO READ - 2012-13	M8							A1			
1936	METERS-NEW-2012-13	M8							A10			
1937	METER REPLACEMENT-2013-14	M8							A1			
1938	LEAD SERVICE LINES	M2							A6			



	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1930			N	C	4A						16		2		1/1/1900 0:00	1		
1931			N	F	2B						12		2		1/1/1900 0:00	10		
1932			N	F	2B						6		2		1/1/1900 0:00	10		
1933			N	F	2B						8		2		1/1/1900 0:00	10		
1934																		
1935																		
1936																		
1937																		
1938			R	C	1D								400		1/1/1900 0:00	10		

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1930			308							
1931			308							
1932			308							
1933			308							
1934			212	200						
1935			212	200						
1936			212	200						
1937			200	212						
1938			100							

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**From:** Michelle Lee <Michelle.Lee@cadmusgroup.com>  
**Sent:** Monday, June 11, 2012 4:18 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Flint Needs

Richard-

We're going to have a group meeting tomorrow to discuss these difficult projects like the KWA project. I'll let you know what we decided after the meeting.

Michelle Lee  
The Cadmus Group, Inc.  
2620 Colonial Drive, Ste. A  
Helena, MT 59601  
(406) 457-5225  
[michelle.lee@cadmusgroup.com](mailto:michelle.lee@cadmusgroup.com)

---

**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Monday, June 11, 2012 1:17 PM  
**To:** Michelle Lee; Prysby, Mike (DEQ)  
**Subject:** RE: Flint Needs

Michelle,

Michelle,

If you are not willing to accept the city's tentative commitment (is that an oxymoron?) to KWA, will you adjust the percentages of this project that you assigned to Genesee County to reflect the fact that they will have to adsorb the costs not being born by the city of Flint? There is no one else to pay the city's share and the County has signed a contract to initiate this project with or without the city's participation.

I suspect the city will end up participating in this project, but they may be using their current position for leverage in getting the Detroit Water & Sewerage Department to reconsider the current ban on blending water from other sources. If they can achieve that goal, they could use a combination of DWSD treated water and raw water from the KWA that would allow them to operate the Flint water treatment plant on a daily basis.

Richard

---

**From:** Michelle Lee [<mailto:Michelle.Lee@cadmusgroup.com>]  
**Sent:** Monday, June 11, 2012 1:38 PM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint Needs

Richard and Mike-

We reviewed the letter from the City of Flint that you submitted to document commitment by the City of Flint to participate in the KWA project. Based on the letter and the e-mail below, it appears that Flint is still considering their

options and are not committed to the KWA project; therefore, we have not included the KWA project in the City of Flint's survey.

Thanks,  
Michelle Lee  
The Cadmus Group, Inc.  
2620 Colonial Drive, Ste. A  
Helena, MT 59601  
(406) 457-5225  
[michelle.lee@cadmusgroup.com](mailto:michelle.lee@cadmusgroup.com)

---

**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]  
**Sent:** Monday, May 21, 2012 1:24 PM  
**To:** Needs Survey Submittals  
**Cc:** Michelle Lee; Benzie, Richard (DEQ)  
**Subject:** Flint Needs

Attached is a letter from the city of Flint that states their support and intent on proceeding with the Karegnondi Water Authority (KWA) project. The city is continues to investigate several options within the overall project to determine the volume of KWA water that they will ultimately purchase. In most recent discussions with the city, they are considering to have the ability to purchase between 20 and 25 MGD of water from the KWA.

If you have any further questions or need any additional information; please don't hesitate to call me or send me an e-mail.

Michael Prysby, P.E.  
Acting District Supervisor  
RMD, MDEQ  
517 335-6122

---

**From:** Berndt, Jason (DEQ)  
**Sent:** Thursday, July 12, 2012 9:59 AM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Monosmith, Carrie (DEQ)  
**Subject:** RE: IUP DW - Questions  
**Attachments:** CRITERIA AND METHOD FOR WELLHEAD PROTECTION GRANT DISTRIBUTION.doc

I added some tables to show funding eligibility and the criteria used to distribute source water protection grant funding. I also referenced the rules as you suggested. Let me know if there are any other suggestions.

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, July 11, 2012 1:29 PM  
**To:** Berndt, Jason (DEQ)  
**Subject:** FW: IUP DW - Questions

---

**From:** Monosmith, Carrie (DEQ)  
**Sent:** Wednesday, July 11, 2012 11:45 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** FW: IUP DW - Questions

Richard, Please complete, or ask Jason to complete a paragraph or so for the Wellhead Protection Workplan that states how municipalities are selected for the grant and how the funds are distributed among them. You can send it to me and I'll forward it to Laura, the sooner it can be done, the better.

These items should be in the procedure we discussed developing. Has anything progressed on the drafting the procedure yet?

*Carrie Monosmith*  
*517-241-2853*

---

**From:** Butler, Sonya (DEQ)  
**Sent:** Wednesday, July 11, 2012 11:36 AM  
**To:** 'Laura Cossa'; Monosmith, Carrie (DEQ)  
**Subject:** RE: IUP DW - Questions

Laura, I've attached the FY13 draft DW IUP (it includes details of how we will spend the 2012 cap grant). The answers to your questions from the current year IUP are noted below.

Carrie, please address Laura's question about the wellhead protection work plan. Thanks

---

**From:** Laura Cossa [<mailto:Cossa.Laura@epamail.epa.gov>]  
**Sent:** Friday, July 06, 2012 5:34 PM  
**To:** Butler, Sonya (DEQ)  
**Subject:** IUP DW - Questions

Hi Sonya,

I remember us having a discussion about the 2012 IUPs, but I don't think these topics came up - I am reviewing the IUP as part of the cap grant application, and I have the following questions:

- only Flint project qualified for disadvantaged community assistance (\$13,870,000), but max amount allowed by the 2012 cap grant is 8,178,900. Are you planning to use PF for the difference, or other grants? This project decided last month not to move forward. If it had, our intent was to provide the PF amounts from the 2010 & 2011 cap grants to the project.
- According to the 2012 guidance, Additional Subsidy should be between \$5,452,600 and \$8,178,900. How much will it be? (is not clear from the IUP because there are several years mixed together). Also, what is the status of the 2010 and 2011 add sub? As of yesterday (I just completed data entry in PBR & CBR for FFATA), 2010 PF allocated is \$9,002,758. 2011 PF allocated is \$0.

Finally, one requirement for the IUP that is related to local assistance set asides (Wellhead Protection), states that IUP must include, at minimum, the process by which recipients will be selected and how funds will be distributed among them (40 CFR 35.555(c)(6)(ii)). I don't see this in the IUP, but can you please, send me that info, or can include it in the Wellhead Protection Workplan? Carrie will need to address this.

With this, I think I am done with DW 2012. I will move it through signature chain for approval next week. I also plan to send the 2007 and 2008 transfers for approval next week. I did not get the approval yet from the Grants Office to start the CW 2012, but that is much easier, I need only 2 days to send it in the signature chain - next week, as well.

Thank you.

Laura

---

**From:** Monosmith, Carrie (DEQ)  
**Sent:** Wednesday, July 18, 2012 10:21 AM  
**To:** Butler, Sonya (DEQ); 'Laura Cossa'  
**Cc:** Tetzlaff, Katherine (DEQ); Benzie, Richard (DEQ); Berndt, Jason (DEQ)  
**Subject:** RE: IUP DW - Questions  
**Attachments:** Work Plan (13) - Wellhead Protection CM Final.doc

Whoops, forgot the attachment, sorry!

*Carrie Monosmith*  
*517-241-2853*

---

**From:** Monosmith, Carrie (DEQ)  
**Sent:** Wednesday, July 18, 2012 10:19 AM  
**To:** Butler, Sonya (DEQ); 'Laura Cossa'  
**Cc:** Tetzlaff, Katherine (DEQ); Benzie, Richard (DEQ); Berndt, Jason (DEQ)  
**Subject:** RE: IUP DW - Questions

Laura,

We revised the FY 2013 Wellhead Protection Set Aside Work Plan to include information on how grant recipients are selected and how the funds are distributed. The revised Work Plan is attached.

Carrie Monosmith  
Chief, Drinking Water and Environmental Health Section  
Michigan Department of Environmental Quality  
Resource Management Division  
PO Box 30241  
Lansing, MI 48909-7741  
Phone: 517-241-2853 Fax: 517-241-1328  
[www.michigan.gov/deq](http://www.michigan.gov/deq)

---

**From:** Butler, Sonya (DEQ)  
**Sent:** Wednesday, July 11, 2012 11:36 AM  
**To:** 'Laura Cossa'; Monosmith, Carrie (DEQ)  
**Subject:** RE: IUP DW - Questions

Laura, I've attached the FY13 draft DW IUP (it includes details of how we will spend the 2012 cap grant). The answers to your questions from the current year IUP are noted below.

Carrie, please address Laura's question about the wellhead protection work plan. Thanks

---

**From:** Laura Cossa [<mailto:Cossa.Laura@epamail.epa.gov>]  
**Sent:** Friday, July 06, 2012 5:34 PM

**To:** Butler, Sonya (DEQ)  
**Subject:** IUP DW - Questions

Hi Sonya,

I remember us having a discussion about the 2012 IUPs, but I don't think these topics came up - I am reviewing the IUP as part of the cap grant application, and I have the following questions:

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Thank you.

Laura



---

**From:** Laura Cossa <Cossa.Laura@epamail.epa.gov>  
**Sent:** Wednesday, July 18, 2012 11:18 AM  
**To:** Monosmith, Carrie (DEQ)  
**Cc:** Benzie, Richard (DEQ); Berndt, Jason (DEQ); Butler, Sonya (DEQ); Tetzlaff, Katherine (DEQ); Steve Marquardt; Jennifer Crooks  
**Subject:** RE: IUP DW - Questions

Thank you, Carrie. This explanation suffices.  
Laura

-----"Monosmith, Carrie (DEQ)" <MONOSMITHC@michigan.gov> wrote: -----  
To: "Butler, Sonya (DEQ)" <BUTLERS2@michigan.gov>, Laura Cossa/R5/USEPA/US@EPA  
From: "Monosmith, Carrie (DEQ)" <MONOSMITHC@michigan.gov>  
Date: 07/18/2012 09:21AM  
Cc: "Tetzlaff, Katherine (DEQ)" <TETZLAFFK@michigan.gov>, "Benzie, Richard (DEQ)" <BENZIER@michigan.gov>, "Berndt, Jason (DEQ)" <BERNDTJ1@michigan.gov>  
Subject: RE: IUP DW - Questions

Whoops, forgot the attachment, sorry!

*Carrie Monosmith*

*517-241-2853*

---

**From:** Monosmith, Carrie (DEQ)  
**Sent:** Wednesday, July 18, 2012 10:19 AM  
**To:** Butler, Sonya (DEQ); 'Laura Cossa'  
**Cc:** Tetzlaff, Katherine (DEQ); Benzie, Richard (DEQ); Berndt, Jason (DEQ)  
**Subject:** RE: IUP DW - Questions

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Carrie Monosmith

Chief, Drinking Water and Environmental Health Section

Michigan Department of Environmental Quality

Resource Management Division

PO Box 30241

Lansing, MI 48909-7741

Phone: 517-241-2853 Fax: 517-241-1328

[www.michigan.gov/deq](http://www.michigan.gov/deq)

---

**From:** Butler, Sonya (DEQ)  
**Sent:** Wednesday, July 11, 2012 11:36 AM  
**To:** 'Laura Cossa'; Monosmith, Carrie (DEQ)  
**Subject:** RE: IUP DW - Questions

Laura, I've attached the FY13 draft DW IUP (it includes details of how we will spend the 2012 cap grant). The answers to your questions from the current year IUP are noted below.

Carrie, please address Laura's question about the wellhead protection work plan. Thanks

---

**From:** Laura Cossa [<mailto:Cossa.Laura@epamail.epa.gov>]  
**Sent:** Friday, July 06, 2012 5:34 PM  
**To:** Butler, Sonya (DEQ)  
**Subject:** IUP DW - Questions

Hi Sonya,

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2011 add sub? As of yesterday (I just completed data entry in PBR & CBR for FFATA), 2010 PF allocated is \$9,002,758. 2011 PF allocated is \$0.

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Thank you.

Laura

[attachment "Work Plan (13) - Wellhead Protection CM Final.doc" removed by Laura Cossa/R5/USEPA/US]

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**From:** Crooks.Jennifer@epamail.epa.gov  
**Sent:** Monday, November 05, 2012 5:31 PM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Kuefler.Janet@epamail.epa.gov;Poy.Thomas@epamail.epa.gov  
**Subject:** Fw: \$106 grant gw work--MDEQ proposal re: CECs, FFCs  
**Attachments:** Request for WQ Monitoring 10-31-12 wb-swas-reqform\_247026\_7 (1).doc

Richard--this a terrific proposal! An excellent use of funding for monitoring. Is there something we can do to get Bill Creal's attention to fund your monitoring proposal? Write him a letter/send him an email in support--from Tom?

Jennifer

----- Forwarded by Jennifer Crooks/R5/USEPA/US on 11/05/2012 04:27 PM -----

From: Janet Kuefler/R5/USEPA/US  
To: Jennifer Crooks@EPA, Cary McElhinney/R5/USEPA/US@EPA, William Spaulding@EPA, Wendy Drake/R5/USEPA/US@EPA, Rita Bair@EPA,  
Cc: Thomas Poy@EPA, Miguel Deltoral@EPA, Nicholas Damato@EPA  
Date: 11/05/2012 04:07 PM  
Subject: Fw: \$106 grant gw work--MDEQ proposal re: CECs, FFCs

---

Jen--Rich B. had asked about other states \$106 work after the states call in Sept (and maybe after you talked with the state!) No guarantee that this will be funded, but I think that it is a very nice proposal.

Rita--can you pls. share as an FYI with UCMR3 lead (was not sure if that was still Ron).

Kim--fyi re: PFCs, CECs.

Jen--do you think that it would be good to follow up with Rich (or a letter to the CWA program, or DW program) re: our support of this project, etc.--not sure if it might help get it funded.

thanks,

+++++

Janet Kuefler  
State Programs Team Leader  
Ground Water and Drinking Water Branch  
U.S. EPA Region 5  
77 W. Jackson Blvd, WG-15J  
Chicago, IL 60604

kuefler.janet@epa.gov

312/886-0123 fax: 312/582-5814

----- Forwarded by Janet Kuefler/R5/USEPA/US on 11/05/2012 04:00 PM -----

From: "Benzie, Richard (DEQ)" <BENZIER@michigan.gov>  
To: Janet Kuefler/R5/USEPA/US@EPA  
Date: 11/05/2012 02:27 PM  
Subject: RE: \$106 grant gw work

---

Janet,

I was cleaning out my inbox and came across this message still highlighted. I thought I would let you know what I submitted in response to the annual request from the Surface Water Assessment Section for suggested monitoring in support of their programs. I don't know if it will go anywhere or just aggravate some program managers, but Liane suggested we put forth a request so I submitted this one. It's not Groundwater work, but it is related to UCMR3 and Source Water Programs at surface water systems.

Richard

**From:** Janet Kuefler [[mailto:Kuefler\\_Janet@epamail.epa.gov](mailto:Kuefler_Janet@epamail.epa.gov)]  
**Sent:** Wednesday, September 26, 2012 3:34 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** §106 grant gw work

Rich--this is something that Tom Poy had asked me to put together for internal purposes in May 2012; we looked at internal documents only (did not verify with states). I thought that you might find it helpful.

+++++

Janet Kuefler  
State Programs Team Leader  
Ground Water and Drinking Water Branch  
U.S. EPA Region 5  
77 W. Jackson Blvd, WG-15J  
Chicago, IL 60604

[kuefler.janet@epa.gov](mailto:kuefler.janet@epa.gov)

**IDEM.** According to the 2011-13 Indiana EnPPA, IDEM plans to spend \$4,965,604 (91.56%) over 2 years for surface water and \$457,966 (8.44%) over 2 years for groundwater. The total amount of 106 funds that will be spent for Groundwater and Surface Water programs is \$5,423,570. It appears that the percentage of funds that Indiana intends to spend on groundwater-related CWA Section 106 work is well below the recommended 15% level.

FY 2010 funding for ground water work was \$46,640, which went toward the salary for 2 summer interns and travel costs for network sampling; FY 2011 funding was \$57,091 for development of an unconsolidated aquifer sensitivity map for Indiana. IDEM uses §106 funds to supplement the implementation of the ground water component of Indiana's Water Quality Monitoring Strategy (Strategy). They utilize these funds for summer interns and sampling supplies and depending upon the year this actual funding amount fluctuates.

**IEPA.** IEPA funding targets, per the EnPPA documents, are at 15% for GW work. (the FY 2011 and 2012 funding targets for IL Section 106 for GW activities are \$819,500 and \$818,200 respectively, our of FY 2011 and FY 2012 are \$5,463,400 and \$5,454,700 respectively), however, specific activities were not included in the EnPPA with the exception of GWR related work, and the State does not have a separate workplan under Section 106.

In a 2007 survey of SWP work, the States reported that "Funding and staff levels are below what would be needed to effectively assist local communities in developing source water protection and management programs. Currently, the Groundwater Section is down two FTEs and has been for several years." and, "The Bureau of Water no longer has a budgeted line-item for the SWP Program.

Therefore, it is nearly impossible to estimate funding sources." and "The Groundwater Section has 14 staff, of which about ½ spend a portion of their time doing SWP." However, there were not responses to any of the funding sources questions, but there was a statement that minimal state funds are used for SWP work.

**MDEQ** We believe that very little or no §106 funds are going to ground water activities.

The 106 grant and the 319 grant are part of a PPG, so their activities are combined into one workplan. The FY 2012 workplan for 106 and 319 for MI shows only Management/Administration, NPDES/Stormwater permits program, and Surface Water Restoration and Protection program. There is nothing in the 25-page workplan related to groundwater except the last page of Attachment C, Michigan's FY 2012 Compliance Monitoring Strategy for the NPDES program, where it says Michigan has no plan to commit to any groundwater activity related to NPDES. There is a Monitoring and Assessment Section, but it is specifically related to surface waters. (In 2007, MDEQ had 4 FTE for the SWP program and used some very small amount of §106 funds for this work--they reported that 90% of their funding of the 4 FTEs was from DWSRF set-asides)

**MN**

**MDH FY 11- \$66,593**

Conduct Reconnaissance Sampling of Private and Public Water Supply Wells-

Various reconnaissance samples (1,112) were analyzed and performed with total costs of \$53,747.

Evaluate natural water quality in community water supply wells –Monitor 125 community water wells on an annual basis to support assessing vulnerability, refining treatment, and updating assessments.

Characterize groundwater quality in wellhead protection areas – Provided technical support to public water suppliers for 1) preparing and implementing wellhead protection plans and 2) managing potential contamination sources that are inventoried during a sanitary survey. Chemistry data is used for characterizing the rates of groundwater recharge and potential impacts of well water quality attributed to land use. The results help refine the approach that will be used to conduct assessment source water monitoring under the federal Ground Water Rule and to assess overall water quality within wellhead protection areas.

I believe that MDH has also been very active in the past several years in setting GW standards (this is correlated with the emerging contaminants work, which is also highlighted in the EnPPA), but I believe this is funded through the tax revenue. MDH uses considerable DWSRF set-asides and state funding sources for SWP work.

**MPCA.** We do not have the exact funding amount used by MPCA for ground water activities.

MPCA's EnPPA does not include specific activities but does include narrative of management priorities, which include ambient gw monitoring and constructing new wells in vulnerable aquifers to add to the monitoring network. Priorities include working with sister agencies (Health and Ag), tracking trends for nitrates, VOCs, chlorides, pesticides and other parameters, focusing on vulnerable aquifers, recharge zones and areas where land use is changing. The EnPPA talks about specific issues, such as human-caused impacts to ground water quality are apparent in many areas of the state: Twin Cities metropolitan area, Rochester and St. Cloud--elevated concentrations of chloride and nitrate and detectable concentrations of VOCs are common; In rural and agricultural areas, nitrate concentrations are frequently elevated or exceed standards; and pesticides and pesticide

degradates are commonly detected, though at concentrations that are nearly always less than applicable drinking water standards. Nutrient issues are specifically mentioned: Areas of impacted ground water correlate well with land uses that are known to cause the observed quality impacts. The prevalence of elevated nitrate concentrations in ground water in regions dominated by agricultural land uses and in unsewered residential areas is particularly noteworthy.

For MPCA there is much more GW work going on now than years ago when there was a disinvestment in GW monitoring (even before the sales tax revenues came into play). The grant workplan calls for 100 wells to be monitored per year.

**OEPA:** FY 12 funding is at 15%--Total federal funding amount (surface and ground water):

\$5,355,800

Ground water amount: \$803,400 (15%)

FY 11 & FY12: Primary activities included in Ohio's FFY2012 CWA Section 106—Ground Water Section work plan:

- ground water quality monitoring and characterization
  - implementing Ohio's Ambient Ground Water Quality Monitoring Network
- source water protection
  - conducting special studies in cooperation with other Ohio EPA programs and Ohio agencies (e.g., Ohio Department of Health) to evaluate local ground water quality impacts
  - maintain and update the Ground Water Quality Impacts database
  - provide GIS support for the development of source water assessment reports for new PWSs and drinking water source protection plans for CWSs
  - continue development of GIS capabilities to support source water assessment and protection programs, water quality characterization, underground injection control, and public drinking water supervision
- integration of CWA and SDWA programs to protect sources of drinking water
  - complete the ground water section of the 2012 Integrated Water Quality Report
  - complete the public drinking water supply beneficial use assessments for all locations with sufficient data and include the findings in the 2012 Integrated Water Quality Report
  - provide technical assistance to CWA programs (e.g., water quality certifications, nonpoint source pollution, NPDES, TMDL) to ensure protection of ground water and sources of drinking water
- provide technical assistance for Ohio's public water supply program
  - develop GWR program, including implementation of the hydrogeological site assessment
- participate on boards, commissions, and organizations to promote a comprehensive and coordinated ground water protection and management program

**WDNR:** We do not have the exact funding amount used by WDNR for ground water activities.

#### FY 2011

- Coordination with the WI Groundwater Coordinating Council - State agencies with separate authority to take action to protect groundwater met to assess the condition of groundwater

statewide, and developed a report to the legislature, to help them prioritize resources to address the greatest threats.

- Setting Ground Water Quality Standards - Ground Water Standards for 15 substances that included six isomers of dinitrotoluene (DNT) and an enforceable standard for perchlorate were promulgated.
- Reducing N in groundwater in prioritized subwatersheds - A draft strategy to reduce nitrogen in groundwater in targeted subwatersheds has been developed and shared with USEPA Region 5.
- Maintaining and enhancing ground water related databases - State databases used to capture information used by agencies to protect groundwater were maintained.
- High nitrate PWSs in WI were mapped - A statewide map was developed of public water systems with high nitrates. This map and an associated strategy will be used by the state to reduce nutrients in Wisconsin waters.
- Source Water Protection Plans were developed and implemented - Risk to public health was minimized through source water protection for 13% of the population served by CWSs.
- Guidance was provided to those putting in monitoring wells - Monitoring wells were developed in a way that allowed the capture of accurate samples of ground water quality.
- Information and training about ground water was delivered to the public, including sand model demonstrations at elementary schools.
- 6,500 well construction reports were reviewed.
- 4 civil prosecutions were settled against well drillers and pump installers for total forfeitures of \$43,000.
- Plans and specifications for high capacity wells were reviewed, on average, in 26 days.

## FY 2012

In addition to the above, a nitrate reduction strategy will be implemented to a degree in accordance with funds available.

*(See attached file: Request for WQ Monitoring 10-31-12 wb-swas-reqform\_247026\_7 (1).doc)*





**Michigan Department of Environmental Quality**  
**Water Resources Division**  
**WATER QUALITY MONITORING REQUEST**  
*Completion of this form is voluntary. Submission of this form is not required.*

**Requestor Information (please print or type):**

NAME Richard Benzie, Chief, Community Drinking Water Unit			ORGANIZATION Office of Drinking Water and Municipal Assistance, DEQ
MAILING ADDRESS 525 W. Allegan			PHONE # (517) 241-1245
CITY Lansing	STATE MI	ZIP 48909	E-MAIL ADDRESS benzier@michigan.gov

**Please identify the water body name(s) and location(s) recommended for monitoring.**

WATER BODY NAME(S) Raisin River, Lake St. Clair Shoreline, Flint River, Huron River, Platte/Boardman Watershed, Elk/Pine/Betsie Watershed and Ontonagon/Iron Watershed	LATITUDE See below	LONGITUDE See below
--	-----------------------	------------------------

\_\_\_\_\_ ¼ of \_\_\_\_\_ ¼ Section: \_\_\_\_\_, Town: T\_\_\_\_\_, Range: R\_\_\_\_\_, Township: \_\_\_\_\_, County: \_\_\_\_\_.

PLEASE DESCRIBE THE REASON FOR MONITORING, LIST ANY QUESTIONS YOU WOULD LIKE ANSWERED, AND SPECIFY THE MONITORING PARAMETERS DESIRED:

The locations listed below are drinking water intakes located in the water bodies listed above, most of whom are targeted for monitoring in the Strategic Environmental Water Quality Monitoring Program for Michigan's surface waters. In addition to the parameters WRD typically monitors in targeted watersheds, Michigan's Public Water Supply Supervision (PWSS) program requests these locations also be sampled for 1,4-dioxane, chlorate, perfluorinated compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA and PFBS), and the following hormones: 17-B-estradiol, 17-@-ethynylestradiol, estriol, equilin, estrone, testosterone and 4-androstene-3,17-dione. These parameters are among the 30 emerging contaminants that are included in EPA's third Unregulated Contaminant Monitoring Rule (UCMR3) that requires certain public water systems to monitor treated drinking water between 2013 and 2015. Monitoring at these intakes can be easily accomplished as sampling stations are already available. Results of this monitoring will provide drinking water systems with the level of emerging contaminants in their source and allow them to focus their Source Water Protection Programs on reducing the presence of these contaminants in their source waters instead of employing costly treatment. It will also facilitate a collaborative effort between the Safe Drinking Water and Clean Water (PWSS and NPDES) programs in Michigan.

SUPPLY NAME	Intake Name	LATITUDE	LONGITUDE
City of Adrian	Lake Adrian Intake	41.91284	-84.03665
City of Algonac	Raw Water Intake Line	42.62083	-82.5264
City of Ann Arbor	Huron River Intake at Barton Pond	42.30864	-83.75374
Village of Blissfield	Raisin River Intake	41.82826	-83.87898
City of Charlevoix	Buried Screen Intake	45.32222	-85.27028
Village of Deerfield	Raisin River Intake	41.88335	-83.78325
City of Flint	Concrete Shore Intake - Standby	43.05489	-83.66871
City of Grosse Pointe Farms/Highland Park	Lake St Clair Intake	42.40313	-82.87852
Huron Regional Water Authority	Lake Huron Intake	44.054667	-83.0025
Ira Township Water Treatment Facility	Lake St Clair Intake	42.68056	-82.67083
Village of Lexington	Lexington Intake	43.26444	-82.51306
City of Monroe / Frenchtown Township	Lake Erie 30" Intake	41.93667	-83.23862
City of Monroe / Frenchtown Township	Lake Erie 42" Intake	41.94173	-83.24994
Mount Clemens	Lake St Clair Intake	42.55825	-82.82481
New Baltimore	New Baltimore WTP Intake	42.67778	-82.73195
Ontonagon	Lake Superior Intake	46.83585	-89.574333
City of Traverse City	East Bay Intake	44.7694	-85.53791



**Michigan Department of Environmental Quality**

**Water Resources Division**

**WATER QUALITY MONITORING REQUEST**

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- The decimal degrees format of latitude/longitude coordinates is preferred (e.g., 42.123456, -84.123456), though not required.

**Please e-mail, mail, or fax completed form to:**

Jeff Varricchione  
Department of Environmental Quality  
Water Resources Division  
P.O. Box 30458  
Lansing, Michigan 48909-7958  
varricchionej@michigan.gov  
Fax: 517-373-9958

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**From:** Varricchione, Jeffrey (DEQ)  
**Sent:** Monday, April 01, 2013 3:45 PM  
**To:** Benzie, Richard (DEQ); Alexander, Michael (DEQ)  
**Subject:** RE: Targeted monitoring request  
**Attachments:** Request for WQ Monitoring 10-31-12 wb-swas-reqform.doc

Richard,

Thanks for the clarifications you sent along. Since Mike will be out this week, I will take a crack at asking some follow-questions to get a better handle on things.

(1) How many samples, at each of the 17 facilities you originally requested, were you hoping to have analyzed for the list of various emerging contaminants you had provided in your request? A single sample at each facility ... for a total of 17 samples in 2013?

(2) In your 3<sup>rd</sup> paragraph below you stated the following: "The analyses could be conducted by the state laboratory where possible (drinking water or environmental lab) or at a properly certified/acceptable contract laboratory if the state lab is unable to perform the analysis, with this program funding that service (shipping and analyses)." By "this program", you meant the WRD's Surface Water Assessment Section, of which Mike is one of the unit chiefs, correct? It seems obvious, but I just wanted to make sure.

(I have attached your original request for in case you want to reference it.)

Thanks,  
Jeff

Jeff Varricchione, Aquatic Biologist  
Michigan Department of Environmental Quality  
Water Resources Division  
Surface Water Assessment Section (SWAS)  
525 West Allegan St.; P.O. Box 30458  
Lansing, MI 48909-7958  
phone: (517) 373-7066  
email: [varricchionej@michigan.gov](mailto:varricchionej@michigan.gov)  
SWAS website: [www.michigan.gov/waterquality](http://www.michigan.gov/waterquality)

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**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, April 01, 2013 3:07 PM  
**To:** Alexander, Michael (DEQ)  
**Cc:** Varricchione, Jeffrey (DEQ)  
**Subject:** RE: Targeted monitoring request

Mike,

The systems identified in the request I submitted are all surface water systems, and as I recall, all except Ann Arbor are located in or near the basins/watersheds targeted for monitoring by WRD in the next year.

My plan was for the samples to be collected from the tap(s) the drinking water treatment plants (WTP) currently use for raw water sampling. Many WTPs have a sampling tap that runs from their intake to their low service pumping station or even into their laboratory making the sample collection easy.

I envisioned staff at the WTP collecting most if not all of the samples and shipping them to the appropriate laboratory. The analyses could be conducted by the state laboratory where possible (drinking water or environmental lab) or at a properly certified/acceptable contract laboratory if the state lab is unable to perform the analysis, with this program funding that service (shipping and analyses).

Does that answer your questions? I am here today and Tuesday, then out until April 11<sup>th</sup>.

Richard Benzie, P.E.  
Community Drinking Water  
Office of Drinking Water and Municipal Assistance, DEQ  
517-241-1245

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**From:** Alexander, Michael (DEQ)  
**Sent:** Friday, March 29, 2013 3:44 PM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Varricchione, Jeffrey (DEQ)  
**Subject:** Targeted monitoring request

Hi Richard,

I had a few questions regarding the targeted monitoring request you sent last fall. You are looking for surface water samples at drinking water intakes throughout the state, correct? Just to be clear are you asking Water Resources Division (WRD) to collect and analyze these samples, just collect the samples and ODWMA would conduct the analysis or for WRD to run the analysis for samples collect by your staff or possibly the drinking water facilitates? It appears as though many of the drinking water intakes are out in the Great Lakes, which will take a significant amount of resources to collect the sample from the vicinity of the intake. Would it be possible for the drinking water facility to collect a sample and ship it to our lab? We are just trying to get our filed work planned for the upcoming year and we want to better understand your request. I'll be out of the office next week, so if you would like to discuss this further, please contact Jeff Varricchione a call at 373-7066 if you have any questions. Talk with you soon.

Mike

Michael Alexander, Chief  
Lakes Erie, Huron and Superior Unit  
Surface Water Assessment Section  
Water Resources Division  
Department of Environmental Quality  
Office Phone 517-335-4189  
[alexanderm2@michigan.gov](mailto:alexanderm2@michigan.gov)



**Michigan Department of Environmental Quality**  
**Water Resources Division**  
**WATER QUALITY MONITORING REQUEST**  
*Completion of this form is voluntary. Submission of this form is not required.*

**Requestor Information (please print or type):**

NAME Richard Benzie, Chief, Community Drinking Water Unit			ORGANIZATION Office of Drinking Water and Municipal Assistance, DEQ
MAILING ADDRESS 525 W. Allegan			PHONE # (517) 241-1245
CITY Lansing	STATE MI	ZIP 48909	E-MAIL ADDRESS benzier@michigan.gov

**Please identify the water body name(s) and location(s) recommended for monitoring.**

WATER BODY NAME(S) Raisin River, Lake St. Clair Shoreline, Flint River, Huron River, Platte/Boardman Watershed, Elk/Pine/Betsie Watershed and Ontonagon/Iron Watershed	LATITUDE See below	LONGITUDE See below
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**Michigan Department of Environmental Quality**

**Water Resources Division**

**WATER QUALITY MONITORING REQUEST**

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**Please e-mail, mail, or fax completed form to:**

Jeff Varricchione  
Department of Environmental Quality  
Water Resources Division  
P.O. Box 30458  
Lansing, Michigan 48909-7958  
varricchionej@michigan.gov  
Fax: 517-373-9958

Message

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**From:** Benzie, Richard (DNRE) [/O=MIGOV/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=BENZIER]  
**Sent:** 7/11/2011 3:06:49 PM  
**To:** Butler, Sonya (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=546df693f79e4d7996846e76665fc93f-Butler Sonya]; Monosmith, Carrie (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=741532eaf7034061b99e374887aa548b-Monosmith Carrie]  
**CC:** Prysby, Mike (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5db07892eaa740c09adbb62a79add8f4-Prysby Mike]; Joseph, Mark (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=31e2695b709943e4a0e17e103e3dce73-Joseph Mark]  
**Subject:** RE: Meeting with Director

Our most knowledgeable staff member on the Flint and Genesee County water supply issues is Mike Prysby in the Lansing District. He has knowledge of the history surrounding the various alternatives that have been considered and has access to the files where the various reports and studies are kept. Mike should know the need for this project and the relative merits. You might want to give him a call if you have any questions.

As I recall, when Flint restored their water treatment plant (using a DWRP loan) to provide the city with the redundancy we requested, there was some discussion with Genesee County about their possible inclusion, but I think hydraulic limitations prevents the County from relying entirely upon the city to supply enough water during an interruption in supply from Detroit. For this reason, the capacity of the Flint water treatment plant was not increased much beyond what was considered necessary to supply the city during an emergency. So Genesee County does need to enhance their reliability, although they or their customers do maintain some standby wells and they can obtain some water from Flint.

One of the main points mentioned by this consultant was the impact of power outages, failed pump stations and water main breaks on the Detroit system. Mike may know for sure, but I think that some of the more recent events have been due to failures within the County's system of pipelines and pump stations. That's not to say it hasn't happened to DWSD, but there have only been a couple of pipeline interruptions on the DWSD portion of the pipeline that I can recall in the last 10 years, and I am only aware of a limited number of power outages such as the 2003 Blackout that affected the entire service area including Genesee County. While we agree they need to provide increased reliability, I am not sure that all the pressure loss events and ensuing impacts to which they allude are the responsibility of DWSD.

Let me or Mike know if you need any assistance.

---

**From:** Butler, Sonya (DNRE)  
**Sent:** Monday, July 11, 2011 9:06 AM  
**To:** Monosmith, Carrie (DNRE); Benzie, Richard (DNRE)  
**Subject:** FW: Meeting with Director

FYI:

I have a meeting this afternoon (1:30 PM) with the Director and Liane to discuss the project below. The meeting was scheduled 2 weeks ago; however, I didn't receive details about it until Friday.

---

**From:** Brad Comment [mailto:brad@KindsvatterAssociates.com]  
**Sent:** Friday, July 08, 2011 9:35 AM  
**To:** Butler, Sonya (DNRE)  
**Subject:** Meeting with Director

Sonya,

I apologize that I am now getting you information regarding our meeting with Director Wyant on Monday with my client, the Genesee County Drain Commissioner Jeff Wright. The purpose of our meeting will be to discuss projects on the Drinking Water Revolving Fund for both Genesee County but also Karegnondi Water Authority.

Part of the discussion will be the hope of having The MDEQ endorsing the project and approving DWRF and other funding, because the project will, at long last, provide a water supply that will truly be reliable. One of the greatest problems for this area is that when the water supply from Detroit is interrupted, this area will experience water restrictions, boil water notices and the complete shutdown of our restaurants, hospitals and many area businesses.

My primary contact for information has been unavailable for the last two weeks, and I apologize for any inconvenience. If I am able to obtain any other information I will be happy to share it with you. I have attached a PowerPoint with general talking points as well as an Executive Summary from an Engineering Report which further discusses the project in comparison to the current system this region has for water.

Thank you for your patience.

Bradley Comment

Vice President of Government Affairs

Kindsvatter & Associates, Inc.

1000 West St. Joseph Highway, Suite 200

Lansing, MI 48915

**PPI** mobile

(517) 485-7711 office

(517) 485-9408 fax



[www.kindsvatterassociates.com](http://www.kindsvatterassociates.com)

Kindsvatter & Associates, Inc. is a strategic initiative government relations and association management specialist firm with a seasoned professional staff whose primary goal is providing clients with business management services and legislative representation at the state and national level.

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**From:** Benzie, Richard (DNRE)  
**Sent:** Thursday, January 06, 2011 4:39 PM  
**To:** Smith, Gerald (MDH); Jonas, Jill D - DNR; Beth Messer; Kirk Leifheit; Mike Baker; 'pcarroll@idem.in.gov'; 'Eric.Portz@illinois.gov'; 'rick.cobb@illinois.gov'; Howard, Brock (DEQ); Monosmith, Carrie (DEQ); Overmyer, Rich (DNRE); Ellingboe, Randy (MDH); Smude, Robert (MDH); Boushon, Lee H - DNR  
**Subject:** RE: Final draft DW Administrators letter to EPA

Gerry,

Please use Liane Shekter-Smith for the signature for Michigan on this letter. As the Chief of the Environmental Resource Management Division of MDNRE (to be MDEQ again in about 60 days), Liane is the State Drinking Water Administrator.

We can provide a signature block for Liane and the state logo electronically and we prefer these options. If you decide to go this route, let me know and I will see that we get them to you.

I don't have a problem with sending an advance copy to Region 5 but defer to what the majority decides.

It has also been suggested that we consider placing the more technical elements of our comments in an attachment to a submittal letter, but again, I defer to the majority or even to the state completing this document.

Thanks for all your work.

Richard Benzie

---

**From:** Smith, Gerald (MDH) [mailto:Gerald.Smith@state.mn.us]  
**Sent:** Wednesday, January 05, 2011 10:22 AM  
**To:** Jonas, Jill D - DNR; Beth Messer; Kirk Leifheit; Mike Baker; 'pcarroll@idem.in.gov'; 'Eric.Portz@illinois.gov'; 'rick.cobb@illinois.gov'; Benzie, Richard (DNRE); Howard, Brock (DNRE); Monosmith, Carrie (DNRE); Overmyer, Rich (DNRE); Ellingboe, Randy (MDH); Smude, Robert (MDH); Boushon, Lee H - DNR  
**Subject:** FInal draft DW Administrators letter to EPA  
**Importance:** High

Good morning all

Attached is the final draft (yeah and a toss of confetti). The letter still needs formatting and that task has been given to our support staff. The track change is still on in case there are still changes to be made. Can everyone please send me their signature block. If you have already done so can you please resend as a couple of my archive email files were lost and I have someone trying to recover them. It will be faster if you resend the signature block.

Do we want the letter to go out with out a letterhead? One option would be to paste the logo from each state at the top of the letter.

Do the directors want to route the letter for signature or use electronic signatures?

Are we okay to send an advance copy of the letter to Region 5?

Thanks

Jerry

---

**From:** Jonas, Jill D - DNR [mailto:Jill.Jonas@Wisconsin.gov]

**Sent:** Monday, January 03, 2011 1:16 PM

**To:** Smith, Gerald (MDH); Beth Messer; Kirk Leifheit; Mike Baker; 'pcarroll@idem.in.gov'; 'Eric.Portz@illinois.gov'; 'rick.cobb@illinois.gov'; Richard (DNRE) Benzie; Brock (DNRE) Howard; Carrie (DNRE) Monosmith; Rich (DNRE) Overmyer; Ellingboe, Randy (MDH); Smude, Robert (MDH); Boushon, Lee H - DNR

**Subject:** RE: Recap REdupx

Hi All,

Yes, we are okay with dropping the 2nd sentence in #2 as suggested by Beth.

Looking forward to seeing the final draft.

Happy 2011 everyone.

Jill

Jill D. Jonas, Director

Bureau of Drinking Water and Groundwater

Wisconsin Department of Natural Resources

101 South Webster, PO Box 7921

Madison, WI 53707-7921

phone: (608) 267-7545

fax: (608) 267-7650

jill.jonas@wisconsin.gov

---

**From:** Smith, Gerald (MDH) [mailto:Gerald.Smith@state.mn.us]

**Sent:** Sunday, January 02, 2011 12:43 PM

**To:** Beth Messer; Kirk Leifheit; Mike Baker; 'pcarroll@idem.in.gov'; 'Eric.Portz@illinois.gov'; 'rick.cobb@illinois.gov'; Richard (DNRE) Benzie; Brock (DNRE) Howard; Carrie (DNRE) Monosmith; Rich (DNRE) Overmyer; Ellingboe, Randy (MDH); Smude, Robert (MDH); Jonas, Jill D - DNR; Boushon, Lee H - DNR

**Subject:** RE: Recap REdupx

Happy New everyone

I have changed the letter to incorporate Beth's comment in paragraph 3.

Regarding the Section 2 comment, I need to defer to Jill and Lee as this was language from their December 15 and 16 email attachments. I am good with dropping from the second bullet "What is needed is a compliance response path for total coliform positives that focuses on GWR responses for the initial confirmed total coliform positive and has an escalated response for additional confirmed total coliform positive results" Jill/Lee are you okay with dropping this sentence? If not can you please address Beth/Mike's questions.

I suggest keeping "state actions" in the first bullet under Section 2.

I had not thought about this until Jill sent me her electronic signature, I am wondering do all the drinking water administrators want to sign the letter electronically or route the letter and sign?

If there are no further comments I will send the final draft to everyone Wednesday for one last review and okay.

Thanks

Jerry

---

**From:** Beth Messer [mailto:Beth.Messer@epa.state.oh.us]  
**Sent:** Wednesday, December 29, 2010 7:31 AM  
**To:** Kirk Leifheit; Mike Baker; 'pcarroll@idem.in.gov'; 'Eric.Portz@illinois.gov'; 'rick.cobb@illinois.gov'; Richard (DNRE) Benzie; Brock (DNRE) Howard; Carrie (DNRE) Monosmith; Rich (DNRE) Overmyer; Smith, Gerald (MDH); Ellingboe, Randy (MDH); Smude, Robert (MDH); Jill D - DNR Jonas; Lee H - DNR Boushon  
**Subject:** RE: Recap - MI Comments

Hey All,

Mike is out this week, but I got his input on this via email and I've combined our comments. The comments are tracked in the attached. The first comment in paragraph 3 is pretty straightforward.

The other comments are in Section #2. We weren't sure what it was trying to say. I think if you remove the sentences, it still gets the point across. Also in the first bullet under #2, we don't think it needs to refer to state actions again since it's in the above paragraph.

Mike would like to see the final version before sign off.

Thanks,  
Beth

>>> "Overmyer, Rich (DNRE)" <OVERMYERR@michigan.gov> 12/27/2010 3:26 PM >>>

All,

Yes, thanks to everyone for their work on this especially Jerry & Beth. Pat's last draft to Mikes revision looks good. Just note we should be consistent in the "1000 or less" population cutoff (eliminate the "less than 1000"). Also the 3rd bullet under item 4 should be: Maintain baseline monitoring as quarterly for all *groundwater systems serving 1000 or less*. (Not all pws).

1. Is this a draft that we can now share with the Region? YES
2. Is this proposal all or nothing? What happens if US EPA is okay with the simplified monitoring process but does not consider dropping the monitoring and reporting from clean compliance history? **NO, NOT ALL OR NOTHING BEING ABLE TO KEEP OUR FIND & FIX PROCESS IS VERY IMPORTANT. HOWEVER, MI ESTIMATES A 60-70% VIOLATION RATE IF MONTHLY MONITORING STAYS IN AS PROPOSED. I SUSPECT THAT WOULD MEAN MASS REFERRALS TO EPA FOR ENFORCEMENT OF MOST M&R VIOLATIONS.**
3. By using "significant deficiency" as part of reduced monitoring are we saying it is not necessary to define "sanitary defect"? **WE DON'T NEED ANOTHER DEFINITION.**
4. Is it okay to drop the following in #2? "Failure to follow Ground Water Rule would trigger a RTRC Level 1 Assessment. A second Level 1 trigger within a rolling 12-month period would trigger Level 1 Assessment and a

third Level1 trigger would require a Level 2 assessment” If not, I need clarification of what is meant by failure to follow GWR? MIKES VERSION WORKS.

5. Do we need to provide comments or proposed definition of season system, clean compliance history, sanitary defect? NO, NOT AT THIS STAGE. LET'S NOT MAKE THIS OVERLY DETAILED.
6. Is it possible to open up the reduced monitoring to NTNCWS as well as TNCWS? The reason I ask is based on my conversation last week with Miguel. In this case we may be able to get a little more. It is still possible that through the rule negotiations that we may need settle for only transient noncommunity systems. Miguel just needs to know our initial and fall back positions. MI HAS ALMOST 1500 NT'S BUT IT IS DIFFICULT FOR US TO ARGUE VERY CONVINCINGLY TO JUSTIFY ANNUAL COLIFORM MONITORING FOR THEM. WE UNDERSTAND IT'S A LITTLE DIFFERENT FOR MN'S PROGRAM THAT IS SET UP BASED ON ANNUAL SITE VISITS & MONITORING FOR THE SYSTEMS. OUR TAKE ON THIS IS MONTHLY MONITORING IS NOT AN EFFICIENT USE OF SCARCE PUBLIC HEALTH RESOURCES. IF WE NEED TO CONCEDE ANNUAL MONITORING FOR NT'S TO MAKE MONTHLY FOR EVERYONE GO AWAY, WE SHOULD. PUTTING IT ON THE TABLE NOW AND BEING FIRM ON IT WOULD BE MI'S VOTE.

Happy New Year!

Rich

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this communication and any response to it constitutes a public record.



The linked image cannot be displayed. The file may have been moved, renamed, or deleted. Verify that the link points to the correct file and location.

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**From:** Benzie, Richard (DNRE)  
**Sent:** Thursday, January 20, 2011 4:15 PM  
**To:** kwelch@tecumseh.mi.us  
**Cc:** Cook, Pat (DEQ)  
**Subject:** Fluoridation of community water systems  
**Attachments:** Fact Sheet for Community Water System 1-18-11 DNRE.DOC

Here is the DRAFT document that is being developed for possible circulation to community water systems that practice supplemental fluoridation. By the way, that is a point to remember – many Michigan water systems already have fluoride naturally occurring in their well water and they only add more to reach the level that has been shown to provide the greatest dental health benefit.

Please do not circulate this document just use it for internal education. We hope to distribute a final document in the next couple of weeks which will be available for general distribution.

As I mentioned, Susan Deming ([demings@michigan.gov](mailto:demings@michigan.gov)) in the Oral Health program in the Department of Community Health and Pat Cook ([cookp@michigan.gov](mailto:cookp@michigan.gov)) in the Community Drinking Water program of the Department of Natural Resources and Environment are the lead contacts for information and guidance on this issue. Susan can provide information on the health benefits of fluoridation and Pat can provide guidance on the design and operation aspects of fluoridation.

Richard Benzie, P.E., Chief  
Community Drinking Water Unit  
Environmental Resource Management Division, MDNRE  
517-241-1245

# **Fact Sheet for Community Water Systems On Release of New Recommended Fluoride Levels for Drinking Water**

**The Michigan Department of Natural Resources and Environment  
and the Michigan Department of Community Health  
1-18-11**

On January 7, 2011, the Environmental Protection Agency (EPA) and the Department of Health and Human Services (HHS) released new recommendations for fluoride levels in drinking water. Their recommendation reaffirms that community water fluoridation is one of the most cost effective and safe measures for controlling dental decay in public health.

The new recommendation was developed in response to a 2006 report from the National Academies of Science suggesting EPA update their health and exposure assessment of fluoride in drinking water **and** other sources. From this assessment, EPA acknowledges it is now possible that Americans receive more fluoride from other sources so that slightly lower levels in drinking water will be sufficient. As a result, the EPA and HHS have **proposed a level of 0.7 mg/L** of fluoride as the optimal level for drinking water, replacing the previous recommendation of 0.7-1.2 mg/L.

This revised recommendation is based on data showing increasing dental fluorosis across the United States as a result of increasing exposure to fluoride in a variety of sources such as toothpaste, mouth wash and the application of various dental products. Mild fluorosis is noticed as chalky white lines on the enamel of teeth, barely noticeable except to a dental professional. Severe fluorosis is rare, but can cause pitting of the enamel and darker brown staining of the enamel.

The new guidance will update and replace original recommendations provided in 1962 by the U.S. Public Health Service. The current EPA regulations on fluoride consist of a Maximum Contaminant Level of 4 mg/L and a Secondary Maximum Contaminate Level of 2mg/L are not changing at this time but they will be assessed. Any proposed changes will have to follow EPA protocols for standard setting.

Comments on the proposed change to the recommended optimal fluoride level will be accepted for 30 days after publication in the Federal Register. Comments can be sent to [CWFComments@cdc.gov](mailto:CWFComments@cdc.gov)

## **What does this mean for water systems?**

Presently maintain current fluoride levels until the official recommendation is released in the Spring of 2011. You can begin to assess what your system would need to change, when this recommendation becomes official.

The Michigan Department of Natural Resources and Environment (DNRE) and the Michigan Department of Community Health (MDCH) are assessing the information and will comply with the HHS recommendation once it is official.

Some information to share with concerned citizens:

- ✓ The preliminary data from our 2010 Count Your Smiles Survey of 3rd graders across the state of Michigan indicates 71% had no signs of dental fluorosis and only 0.04% had perceived severe fluorosis.
- ✓ The changed recommendation is very close to what most water communities were already using. Any reductions needed will be made after the revised recommendation becomes final later this year.
- ✓ Community water fluoridation is still considered safe and effective with no other health effects at the current levels used.
- ✓ There's nothing extraordinary about these announcements. In fact, they are very encouraging because they show that EPA and HHS are exercising their responsibilities to review standards and offer guidance on public health issues.
- ✓ The HHS updated recommendation regarding the optimal level of fluoride for public water supplies that adjust fluoride levels to prevent tooth decay is based upon the latest science. This decision will continue to protect Americans' dental health while also minimizing the chance of dental fluorosis—discoloration of teeth.
- ✓ If more information is needed refer to Susan Deming, Fluoridation Coordinator, MDCH-Oral Health, [demings@michigan.gov](mailto:demings@michigan.gov)

More general information on fluoride for improving dental health including an updated questions and answers document can be found at:

<http://www.cdc.gov/fluoridation/index.htm>.

All the risk analysis documents, including information on the results of the peer review process, are posted on EPA's website at:

[http://water.epa.gov/action/advisories/drinking/fluoride\\_index.cfm](http://water.epa.gov/action/advisories/drinking/fluoride_index.cfm).



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**From:** Benzie, Richard (DNRE)  
**Sent:** Thursday, March 10, 2011 9:24 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** FW: Joint Evaluation Documents for March 15, 2011  
**Attachments:** Draft GWDW Pre meeting write-up for MDNRE J.E. FY 2011 2-15-11.docx; Draft NPDES Pre meeting write-up for MDNRE J.E. FY 2011 2-15-11.docx; Draft WECAB Pre meeting write-up for MDNRE J.E. FY 2011 2-15-11 .docx; Draft WQB Pre meeting write-up for MDNRE J. E. FY 2011 2-15-11.docx; Draft WWB Pre meeting write-up for MDNRE J. E. FY 2011 2-15-11.docx; Draft Agenda for MDEQ J.E. 3-15-11 .docx

-----Original Message-----

From: Crooks.Jennifer@epamail.epa.gov [mailto:Crooks.Jennifer@epamail.epa.gov]  
Sent: Tuesday, February 22, 2011 12:02 PM  
To: Shekter Smith, Liane (DNRE); Benzie, Richard (DNRE); Monosmith, Carrie (DNRE); Dettweiler, Dan (DNRE); Howard, Brock (DNRE)  
Cc: Wychocki.Dennis@epamail.epa.gov  
Subject: Fw: Joint Evaluation Documents for March 15, 2011

I talked with Dennis Wychocki, who is the R5 Water Division MI Program Manager for all the water programs in MI. He has been forwarding information to Laura Smith for distribution. I just want to make sure your division is getting the applicable information for the Joint Assessment to be held Thursday March 15 at 1pm CST as a video conference. Ground Water and Drinking Water will be discussed first. I have also attached the Joint Evaluation Assessment document I prepared for the Michigan drinking water program. If you have questions, please contact me.

Jennifer Kurtz Crooks  
Michigan Program Manager  
Ground Water and Drinking Water Branch  
U.S. EPA, Region 5  
77 West Jackson  
Chicago, IL 60604  
(312) 886-0244  
(312) 582-5853 (fax)  
crooks.jennifer@epa.gov

Draft Agenda  
Michigan Department of Natural Resources and Environment & Region 5 EPA  
Program Evaluation  
March 15, 2011

Meeting Expectations: The meeting will provide MDNRE and Region 5 management with the opportunity to jointly assess program progress. The desired outcomes of the meeting are to improve teamwork and communications, celebrate the successes that have been achieved to date, identify specific actions where performance may be improved.

Meeting Preparation: Prior to the meeting, Region 5 management is expected to contact their MDNRE counterparts and discuss how programmatic issues will be presented. MDNRE and Region 5 management are mutually accountable for developing a coordinated presentation rather than two distinct discussions.

Tuesday, March 15, 2011  
Location for Meeting: TBD

1:00 Large Group Gathers: Introductions and Welcome

1:10 Program Direction, Priorities, Budget Issues [Tinka Hyde / William Creal / Liane Shekter Smith]

1:30 Joint Assessment on Program Commitments and their Status along with Performance Highlights, Areas of Improvement and Budget Issues

- Ground Water & Drinking Water [Thomas Poy /?]
- Wetlands & Watersheds [Peter Swenson /?]
- Monitoring / Water Quality Standards [Linda Holst /?]
- NPDES Program Permitting and Compliance [Kevin Pierard /?]
- Enforcement & Compliance [Dean Maraldo/?]
- Grants [Debbie Baltazar/?]

4:20 Review and Wrap Up

4:30 Adjourn

\* All times are Central Standard Time.

----- Forwarded by Jennifer Crooks/R5/USEPA/US on 02/22/2011 10:43 AM  
-----

From: Dennis Wychocki/R5/USEPA/US

To: R5 WD Management Team

Cc: Noel Vargas/R5/USEPA/US@EPA, Quintin White/R5/USEPA/US@EPA, Belinda Montgomery/R5/USEPA/US@EPA, Edward Pniak/R5/USEPA/US@EPA, Jennifer Crooks/R5/USEPA/US@EPA

Date: 02/16/2011 07:54 AM

Subject: Joint Evaluation Documents for March 15, 2011

The following are the documents that we will use during our Joint Evaluation video conference on March 15, 2011. These documents were sent to MDNRE for their review and comments. If there are any changes requested by MDNRE I will discuss them with the appropriate Branch.

(See attached file: Draft GWDW Pre meeting write-up for MDNRE J.E. FY 2011 2-15-11.docx)

(See attached file: Draft NPDES Pre meeting write-up for MDNRE J.E. FY 2011 2-15-11.docx)

(See attached file: Draft WECAB Pre meeting write-up for MDNRE J.E. FY 2011 2-15-11 .docx)

(See attached file: Draft WQB Pre meeting write-up for MDNRE J. E. FY 2011 2-15-11.docx)

(See attached file: Draft WWB Pre meeting write-up for MDNRE J. E. FY 2011 2-15-11.docx)

(See attached file: Draft Agenda for MDEQ J.E. 3-15-11 .docx)

Thanks

Dennis Wychocki  
State Program Manager  
State and Tribal Programs Branch  
U.S. Environmental Protection Agency  
77 West Jackson  
Chicago, IL 60604

Phone (312) 886-0228  
Fax (312) 582-5845

wychocki.dennis@epa.gov

## **Drinking Water /Ground Water**

### **Branch Summary:**

Michigan's drinking water program has been innovative in recent years in meeting its commitments to provide safe drinking water, in light of continuing decreases in funding levels. However, Region 5 is concerned regarding the State's ability to adequately fund its drinking water program in upcoming years. The State has requested funds for six set-asides from the Drinking Water Revolving Fund (DWRf) to assist with implementation of the drinking water program and to fund most of Michigan's source water protection activities. For FY 2011, there was an increased use of set-aside funds to pay for existing staff, as State resources diminished. The total number of FTEs funded through the DWRf set-asides increased to 28.1 FTEs, which is a 66 percent increase over FY 2010.

While most current data needs are being met, declining funding and staff resources are surfacing in the MDNRE's inability to maintain its data management systems for the long term. Specific needs include: the transition from WaterTrack to SDWIS-State, complete the Electronic Laboratory Report Application, and complete the incorporation of the Compliance Decision Support into SDWIS-State. The Region is specifically focused on the transition from WaterTrack to SDWIS-State, as stated in our January 7, 2011 letter.

A key reason for Michigan's high compliance rate is the strength of its drinking water field surveillance program. The MDNRE's field presence at public water supplies, including sanitary surveys, is the cornerstone of the drinking water program. Several years ago, the State fell behind in completing sanitary surveys at surface water systems within the 3-year timeframe. A strong focus was then placed upon decreasing the backlog of sanitary surveys at CWSs and NCWSs and maintaining timely sanitary surveys. The Region strongly supports continued funding and providing resources to maintain the quality and timeliness of Michigan's routine surveillance program and technical assistance to public water supplies.

During FY 2010, 96.5% of the Michigan population served by CWSs received drinking water that met health-based standards. This number exceeds Region 5's Federal FY 2010 national target, and Michigan's FY 2010 commitment of 95%. During FY 2010, 94.3% of Michigan CWSs were in compliance with health-based standards, which exceeded Region 5's Federal FY 2010 national target of 90%, and Michigan's FY 2010 commitment of 90%. During FY 2010, 99% of "person months" (i.e., all persons served by community water systems times 12 months) during which Michigan CWSs provided drinking water, met all applicable health-based drinking water standards. This number exceeds Region 5's Federal FY 2010 national target, and Michigan's FY 2010 commitment of 96%. MDNRE is commended for exceeding all FY 2010 commitments.

Michigan is currently up-to-date on rule submittal requirements. The State's Ground Water Rule (GWR), Long Term Enhanced Surface Water Treatment Rule (LT2ESWTR), Stage 2 Disinfection/Disinfectant By-Products Rule (Stage 2 DDBR), and the Lead and Copper Rule Short-Term Revisions (LCRSTR) have undergone Regional review, and were promulgated by the State on December 4, 2009. In light of the recent LCRSTR change that allows one sample per available tap, GWDWB has included Michigan's Lead and Copper Rule Minor Revisions (LCRMR) primacy package with the above rule package. Award of primacy has been delayed since we are waiting for Headquarters' approval of the first State primacy package submittals

before moving forward with Michigan's package. Stage 2 DBPR and LT2SWTR implementation transitioned to MDNRE in January 2011.

MDNRE has been very successful in implementing its source water protection program and continues to make progress. Michigan's matching Wellhead Protection Grants continues to provide funds to communities to protect groundwater. The development and implementation of Michigan Interactive Ground Water for Wellhead Protection Program (MIGWWP), assisted by Michigan State University, has provided an invaluable mapping tool that will produce inexpensive, accurate three dimensional 10-year time of travel delineations for all wells, including private wells.

Specific commitments from the FY 2011 Annual Resource Deployment Plan (ARDP) are discussed below. Beginning in FY 2007 and continuing to the present, MDNRE has temporarily disinvested in certain non-public health related primacy activities due to resource constraints.

**1. Commitment: Implement SWTRs - FBRR, SWTR, IESWTR, LT1SWTR, LT2SWTR**

**The MDNRE commits to complete implementation of the SWTR, FBRR IESWTR, and LT2SWTR.**

**Commitment Status:** MDNRE implemented all of the SWTRs during FY 2010.

**2. Commitment: Implement TCR**

**The MDNRE has committed to completing all associated activities.**

**Commitment Status:** The MDNRE has implemented all TCR activity during calendar year 2010. The Region was pleased to see the extensive investigation that occurred following the recent E. coli positive in the Detroit area, which showed the contamination was limited to the sample site.

**3. Commitment: Adopt & Implement the GWR**

**The MDNRE has committed to completing all associated activities.**

**Commitment Status:** As State noted in its FY 2011 ARDP, WaterTrack has limited capability to report GWR violations, new site visit elements in the GWR, or other new violation codes. The Region initiated discussion with the State and HQ to begin the project to transition from WaterTrack to SDWIS-State, as stated in the Region's January 7, 2011 letter. The MDNRE is implementing all GWR activity related to public health protection, but has temporarily disinvested in one non-public health activity under the GWR.

**4. Commitment: Implement NPDWRs for Nitrate and Nitrite**

**The MDNRE has committed to completing all associated activities.**

**Commitment Status:** MDNRE has put forth a very good effort in maintaining compliance with the Nitrate/Nitrite rules, as indicated by the recent data verification report.

**5. Commitment: Implement the Lead & Copper Rule**

**The MDNRE has committed to all associated activities.**

**Commitment Status:** The MDNRE is implementing all LCR activity related to public health protection, but has temporarily disinvested in four non-public health activities under the LCR.

**6. Commitment: Adopt & Implement the D/DBPRs**

**The MDNRE commits to complete implementation of the Stage 1 D/DBPR; and the Stage 2 D/DBPR.**

**Commitment Status:** Transition of the implementation of the Stage 2 D/DBPR to MDNRE occurred in January 2010. MDNRE committed to improving chlorine residual compliance, as recommended in the recent data verification report. The MDNRE is implementing all Stage 1/Stage 2 D/DBPR activity related to public health protection, but has temporarily disinvested in three non-public health activities.

**7. Commitment: Adopt and Implement NPDWRs for IOCs (including As)**

**The MDNRE has committed to all associated activities.**

**Commitment Status:** The MDNRE is meeting its commitments to implement regulations for inorganic contaminants, including arsenic. About 60 noncommunity systems that are in violation of the arsenic standard are participating in an interim bottled water program which minimizes exposure to elevated arsenic.

**8. Commitment: Implement and Enforce Radionuclide NPDWR**

**The MDNRE commits to complete implementation of all activities under this rule.**

**Commitment Status:** The MDNRE is meeting commitments to implement this rule. MDNRE committed to ensure that public water supplies monitor for all sources under the new Radionuclides Rule, as noted in the recent data verification report.

**9. Commitment: Implement NPDWRs for SOC**

**The MDNRE has committed to all activities under this rule.**

**Commitment Status:** The MDNRE is implementing all SOC related activity.

**10. Commitment: Implement NPDWRs for VOCs**

**The MDNRE has committed to all activities under this rule.**

**Commitment Status:** The MDNRE is implementing all VOC related activity.

**11. Commitment: Organic and Inorganic Chemical Monitoring Waiver Program**

**Commitment Status:** MDNRE has not re-evaluated and updated their original approved waiver program but they intend to do so in the future.

**12. Commitment: Implement the Sodium NPDWR**

**The MDNRE has committed to all associated activities.**

**Commitment Status:** The MDNRE is meeting its commitments to implement the sodium rule.

**13. Commitment: Implement the PN Rule**

**The MDNRE does not commit to issuing/reporting violations for PWSs who failed to issue Tier 3 PN.**

**The MDNRE does not commit to issuing/reporting Tier 3 PN violations.**

**Commitment Status:** MDNRE is issuing/reporting all other violations to EPA.

**14. Commitment: Implement the CCR Rule**

**MDNRE has temporarily disinvested in the following non-public health activities:**

- issuing/reporting any violations under the CCR.**
- enforcing the CCR.**

**Commitment Status:** MDNRE does continue to require the systems to submit a CCR, and follows up with systems that have failed to submit a CCR.

**15. Commitment: Laboratory Certification**

**Commitment Status:** MDNRE commits to ensuring all laboratories that produce results for compliance with the Safe Drinking Water Act are certified by the State, through audits conducted every three years.

**16. Commitment: Compliance and Enforcement Management**

**The MDNRE has committed to all associated activities.**

**Commitment Status:** MDNRE has met or exceeded, all National Targets and Program Activity Measures.



## **17. Commitment: Data Management**

**Issues raised in the most recent End-of-Year evaluation include:**

- upgrade of the noncommunity data management system, WaterTrack; progress noted in January 7, 2011 letter to State;
- complete the electronic laboratory report application (eDWR) that will allow laboratory data to flow to SDWIS-State. MDNRE continues to pursue completion of eDWR as resources allow;
- incorporate Compliance Decision Support into SDWIS/State. MDNRE expects to see the majority of distribution system compliance monitoring, Phase 2/5 and radionuclide monitoring in SDWIS by early 2011; and,
- timely submittal of NCWS quarterly data. Region 5 has seen improvement in quarterly reporting.

**Commitment Status:** The Region notes progress in all of the above issues, though diminishing resources have minimized progress.

## **18. Commitment: Prepare & Submit the Annual Compliance Report (ACR)**

**MDNRE only commits to meeting the July 1 due date when final ACR guidance is issued by EPA before June 1.**

**Commitment Status:** In 2010, U.S EPA SDWIS data was not available until August 2011. The 2009 ACR was submitted September 7, 2010.

## **19. Commitment: Variances and Exemptions**

**Commitment Status:** Variances and Exemptions are not applicable in Michigan.

## **20. Commitment: Conduct Joint Assessment of Program Progress Using Evaluation Tools such as U.S. EPA's Strategic Plan and State/U.S. EPA Shared Goals**

**Report on status of MDNRE commitments for measures in USEPA's strategic plan.**

**Commitment Status:** MDNRE has met all of its FY 2010 targets for drinking water and source water protection.

## **21. Commitment: Prepare for Security Threats at PWSs**

**Commitment Status:** The MDNRE has committed to all associated activities.

## **22. Commitment: Operator Certification**

**Commitment Status:** The MDNRE has committed to all associated activities.

## **23. Commitment: Capacity Development Program**

**Commitment Status:** The MDNRE has committed to all associated activities.

**24. Commitment: Source Water Protection**

**Commitment Status:** The MDNRE has committed to all associated activities.

**25. Commitment: Manage the DWSRF**

**Commitment Status:** The MDNRE has committed to all associated activities.

**26. Commitment: Conduct Joint Assessment of Program Progress Using the PWSS Program Implementation Report (Logic Model)**

**Commitment Status:** A draft Logic Model report for the review period of 2004-2008 was provided to the State in April 2010. A revised Logic Model report will be prepared this spring for the review period of 2005-2009.

**27. Commitment: Sustainable Infrastructure**

**MDNRE states that providing incentives through DWSRF set-asides to encourage sustainable water infrastructure, cannot be done through DWSRF set-asides unless changes are made to the prioritization system. MDNRE will continue to work with staff and water supplies to encourage/promote asset management, sustainable infrastructure, and water efficiency activities.**

**Commitment Status:** No commitment was made relative to climate change activities.

**28. Commitment: Environmental Justice**

**MDNRE states that providing incentives through DWSRF set-asides to encourage Environmental Justice, cannot be done through DWSRF set-asides unless changes are made to the prioritization system.**

**Commitment Status:** No commitment can be made at this time.

**29. Commitment: Wellhead Protection.**

**Meet SDWA WHP requirements.**

**Commitment Status:** Budget constraints continue to limit the effectiveness of the State wellhead protection program. Continued funding support is needed to develop and maintain good working relationships with local health departments and to build support for plan development and implementation with public water systems and the general public.

## Water Quality Monitoring

### Branch Summary on Monitoring and Standards Efforts:

MDNRE and EPA continue to emphasize several key issues to refine the water quality monitoring and assessment programs. These are development and implementation of a comprehensive monitoring strategy including randomized monitoring, monitoring and information dissemination for Great Lakes beaches, continued development of biological criteria and assessment methods, and data/information management. For Water Quality Standards (WQS), the major focus in the work plan is to develop nutrient criteria consistent with Michigan's Nutrient Criteria Development Plan. Key accomplishments for these programs are described below.

- 1. Commitment: Perform biological surveys to support and evaluate the effectiveness of the MDNRE's water quality protection programs, assist TMDL development, support the Sections 305(b) and 303(d) reporting process, and assess water quality trends. Biological surveys will primarily be conducted in wadeable and nonwadeable river segments located in watersheds scheduled for NPDES permit issuance in FY 2012. Michigan will conduct biosurveys at approximately 325 sites, including targeted and randomly selected sites. A list of the biological surveys to be conducted in FY 2010 will be provided to the USEPA when finalized. Study plans and staff reports are developed for each biological survey conducted. All biological survey study plans and copies of biological survey staff reports completed during FY 2010 will be provided to the USEPA upon request. A list of available staff reports is posted on the MDNRE's Web site.**

**Commitment Status:** EPA has received a list of watersheds with the number of sites sampled in each watershed for MDNRE's biosurvey program. There were a total of 258 probability sites that were visited in 9 watersheds in 2010. Reports for the biosurveys are currently being developed.

- 2. Commitment: Perform conventional pollutant water quality studies to support the MDNRE's water quality protection programs, assist TMDL development, and support the Sections 305(b) and 303(d) reporting process. Conventional pollutant water quality studies will primarily be conducted in watersheds scheduled for NPDES permit issuance in FY 2012. Michigan will conduct up to 30 water quality studies. A list of the water quality studies to be conducted in FY 2010 will be provided to the USEPA when finalized. Study plans and staff reports are developed for each water quality study conducted. All water quality study plans and copies of water quality study staff reports completed during FY 2010 will be provided to the USEPA upon request. A list of available staff reports is posted on the MDNRE's Web site.**

**Commitment Status:** MDNRE has supplied EPA Region 5 with a list of sites that were visited during 2010 for their Statewide water quality tributary fixed station sampling effort (31 sites – sample 3-12 times a year) and for their statewide water quality probability-based sampling effort (55 sites).

3. **Commitment: Coordinate the Fish Contaminant Monitoring Project.** Fish contaminant monitoring is conducted to support and evaluate the effectiveness of the MDNRE's water quality protection and restoration programs, support the Michigan Department of Community Health's fish contaminant advisory setting process, assist TMDL development, support the Sections 305(b) and 303(d) reporting process, and assess water quality trends. Typically, Michigan conducts fish contaminant monitoring at an average of 70 water bodies per year. The FY 2010 fish contaminant monitoring site list will be provided to the USEPA when finalized. A copy of the fish contaminant monitoring annual report will be provided to the USEPA.

**Commitment Status:** MDNRE has supplied EPA Region 5 with the proposed list of sites that also includes information regarding the type of fish to be collected, the size class, parameters to be analyzed and purpose of collection (edible/trend) for 2010. The list in hand is dated April 2010 and lists 74 sites, of which 9 are for trend monitoring; the remainder of the sites are designated for edible portion monitoring.

4. **Commitment: Coordinate the development and implementation of the water quality monitoring strategy, including work with the USEPA to hold meetings/conference calls (as appropriate) to develop a process and timeframe for reviewing and updating the monitoring strategy over time.**

**Commitment Status:** Although MDNRE did not coordinate development of the monitoring strategy with EPA as planned, there have been internal discussions regarding elements of the monitoring strategy that are funded by the Clean Michigan Initiative. These discussions have produced recommendations on modifications to the monitoring program but MDNRE does not believe that a formal update is needed. They will submit a report on the recommended modifications to the program, and EPA will get back to MDNRE with any questions after reviewing the submittal.

EPA has emphasized several ways in which MDNRE could update the monitoring strategy (e.g., supplements or addenda (to prevent having to update the strategy document itself)). MDNRE has acknowledged that they need to update their monitoring program gaps portion of the strategy as it is related to the supplemental Section 106 funding.

5. **Commitment: Participate on the USEPA, Region 5, Bioassessment Work Group, and the 2010 Surface Water Monitoring and Standards meeting, pending out-of-state travel approval.**

**Commitment Status:** While there were no SWiMS meeting in 2010, MDNRE did participate in the Regional workgroup that is developing a Biological Condition Gradient for the Northern Forested Ecoregion cold and cool water streams.

6. **Commitment: Maintain in-house water quality monitoring databases and enter water, sediment, and biological data into the USEPA's STORET/Beach Monitoring Programs via the CDX by September 30, 2010.**

**Commitment Status:** Complete/ongoing. MDNRE has uploaded over 11,000 monitoring records into STORET via WQX from their 2010 monitoring season. These uploads include beach monitoring data. Beach notification data are submitted to CDX by January 31 of each year, as required by all BEACH Act grantees. Michigan's database is maintained in compliance with EPA BEACH Act data element requirements.

**7. Commitment: Maintain and enhance, as appropriate, the MiSWIM System.**

**Commitment Status:** Complete/ongoing. MDNRE continues to update and maintain their MiSWIM system, which allows users to view current water quality monitoring data, assessment information, beach closures, etc.

**Water Quality Standards**

**1. Commitment: Conduct chemical evaluations for NPDES permit chemicals of concern; and calculate Rule 57 aquatic life, human health, and wildlife criteria as appropriate. Copies of these chemical evaluations and Rule 57 criteria will be provided to the USEPA for inclusion in the Great Lakes Initiative Clearinghouse. Copies of chemical evaluations for existing Rule 57 criteria will be provided as resources allow.**

**Commitment Status:** By design, MI's WQS program is structured primarily as narrative criteria with translators that allow for calculation of numeric expressions of the narrative as needed to support NPDES permits. Consequently, MDNRE does not submit documents to EPA for technical input or review and approval. MDNRE also lacks WQS rulemaking authority, so any revisions to WQS rules would be conducted by the MI legislature. EPA has no reason to suspect any problems in the operation of MI's WQS program, but also has minimal information for evaluating its performance during FY 2010.

On an on-going basis, MDNRE provided Region 5 with chemical evaluations for the Great Lakes Initiative Clearinghouse and provided the information in the format requested by Region 5. Region 5 greatly appreciates Michigan's efforts and coordination in this area.

**2. Commitment: Develop nutrient criteria consistent with Michigan's mutually agreed upon Nutrient Criteria Development Plan, including timely notification to the USEPA of any changes to the plan that the MDNRE is proposing, and Part 31, Water Resources Protection, of the NREPA. Any plan revisions will be sent to the USEPA by August 1, 2010, to allow mutual agreement by September 30, 2010.**

**Commitment Status:** Michigan continued work on nutrient criteria and implementation development consistent with the Nutrient Criteria Development Plan and provided updates and notification of changes to the plan in time to allow for mutual agreement by September, 2010.

**2009 Monitoring Initiative**

3. **Commitment:** The DNRE, Water Bureau will conduct the field work portion of the National Coastal Survey project, using the prescribed methods and quality assurance/quality control procedures for 107 Great Lakes near-shore sites and ten re-visits in 2010 (117 total site visits).

**Commitment Status:** MDNRE has completed fieldwork for the 107 Great Lake sites and the 10 revisit sites and has submitted samples to their respective labs for analysis. Field staff attended required training that was held in Ohio in May and the field crew was available for field method review by EPA in July 2010. MDNRE participated on conference calls in preparation for the survey, during the survey and in several follow-up calls.

4. **Commitment:** DNRE will conduct macroinvertebrate and habitat surveys at 200-275 randomly selected sites in nine major watersheds/watershed groups in Michigan. The data collected from these surveys will be entered into the Water Bureau's biological survey database and the Michigan Surface Water Information Management System to ensure availability to the public and other interested parties in a geographic information system-based format via the Internet. A CD with the 2010 watershed reports also will be provided.

**Commitment Status:** We have contacted MDNRE for an update on this commitment but have not yet received a response. This section will be revised when an update is provided.

#### **Great Lakes Beach Water Quality Monitoring**

5. **Commitment:** The DNRE will prepare and submit a list of coastal recreation waters according to Section 406(c) of the BEACH Act. Submission of data will be conducted in coordination with USEPA staff.

**Commitment Status:** The MDNRE has posted its 603 Great Lakes public beaches on MDNRE's website (<http://www.deq.state.mi.us/beach/>) with coordinates for latitude, longitude, and beach dimensions. Completion of the list is ongoing, with the most recent update provided on January 31, 2010.

6. **Commitment:** The DNRE will assist local health officers with the responsibility to notify the public of water quality of Michigan's beaches located along the Great Lakes via the Michigan Beach Monitoring website at <http://www.deq.state.mi.us/beach/>.

**Commitment Status:** Michigan's beach monitoring program includes a public notification component that advises beachgoers when it is not safe to swim due to high bacteria levels. Local health departments, which rely on water quality results to determine beach open/closure status, report to local officials and the MDNRE within 36 hours of evaluating the water quality at a beach. Water quality results on Tier 1 and Tier 2 Great Lakes public beaches are posted in the Michigan Beach Monitoring database and at [www.deq.state.mi.us/beach/](http://www.deq.state.mi.us/beach/) during the beach season (Memorial Day through Labor Day). The public is better informed on the risks of swimming in

contaminated water due to improved signage and information provided on the aforementioned website. Michigan's 2009 Swimming Season Summary is posted on EPA's Beach Watch website at [www.epa.gov/waterscience/beaches/seasons/2009/mi.html](http://www.epa.gov/waterscience/beaches/seasons/2009/mi.html).

7. **Commitment: The DNRE will require beaches to be monitored according to R 323.1062 of the Part 4 rules, Water Quality Standards (WQS), promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.**

**Commitment Status:** Local health departments, in cooperation with the MDNRE, collect, analyze, and report results of *E. coli* analysis in the Michigan Beach Monitoring database and on the website within 36 hours of testing. The MDNRE requires beaches to be monitored according to the rules cited above and posts its beach monitoring procedures on its web site.

*E. coli* results for the Tier 1 and Tier 2 Great Lakes public beaches are reported through the Michigan Beach Monitoring database and web site ([www.deq.state.mi.us/beach/](http://www.deq.state.mi.us/beach/)) during the beach season, and are posted annually on EPA's Beach Watch web site.

8. **Commitment: The DNRE will use the approved quality assurance project plan (QAPP).**

**Commitment Status:** MDNRE's Beaches Program QAPP for water sampling and lab analysis was approved by the EPA in June 2009, and is effective through December, 2014.

9. **Commitment: The DNRE and local health departments will provide local beach monitoring program information to the public via press releases, brochures, Internet access, beach signs, and beach seminars.**

**Commitment Status:** MDNRE's beach program includes a public notification component to advise beachgoers when it is not safe to swim due to high bacteria levels. Beach owners and operators of Great Lakes public beaches are required to post signs indicating water quality during the beach season. Local health departments report beach open/closure status to local officials and the MDNRE within 36 hours of evaluating the water quality at a beach, which is then posted on the Michigan Beach Monitoring web site. Information on the risks of swimming in contaminated water is also available on the web site, at Michigan Environmental Health Association-sponsored conferences, and at most local health departments throughout the year.

10. **Commitment: Development of a risk-based beach evaluation and classification plan:**

**Commitment Status:** One of the requirements of BEACH Act grantees, as outlined in EPA's *National Beach Guidance and Required Performance Criteria for Grants*, mandates that states develop a risk-based beach evaluation and classification plan and apply it to state coastal recreation waters. The program must describe the factors

used in its evaluation and classification process and explain how its coastal recreation waters are ranked as a result of the process.

In 2003, Michigan's coastal beaches were evaluated and classified using a three-tiered system as defined in EPA's guidance. Each year, the MDNRE notifies the EPA when beach ranking and sampling frequencies change, after providing the public with an opportunity for comment.

The risk-based beach evaluation and classification plan was completed by staff from local health departments in cooperation with the MDNRE. Staff from local health departments identified beach areas located on coastal recreation waters in their district and conducted sanitary surveys that include an evaluation of the beach area and potential sources of contamination. Data for beach use is submitted by local health departments to the MDNRE. The MDNRE has the data, has registered with CDX, and has agreed to submit data to the EPA according to reporting requirements. MDNRE is in compliance with this performance criterion.

#### **11. Commitment: Development of a tiered monitoring plan:**

**Commitment Status:** Michigan's coastal beaches were evaluated and classified in 2003 using a three-tiered system as defined by the EPA guidance. The three-tiered system ranks beaches according to location of known or potential sources of contamination, other conditions related to water quality, human exposure, and beach use including the importance to local economy and community input. Water sampling strategies may vary for beaches depending on rank, spatial and temporal variation, and resource constraints. MDNRE is in compliance with this performance criterion.

#### **12. Commitment: Monitoring report submission and delegation:**

**Commitment Status:** Another performance criterion required of BEACH Act grantees mandates development of a mechanism to collect and report monitoring data in timely reports. In addition, grantees must document any delegation of monitoring responsibilities to local governments. The MDNRE is in compliance with these performance criteria. A local health officer or authorized representative evaluates the quality of water at bathing beaches to determine whether the water is safe for bathing. MDNRE has a database and web site where local health departments report *E. coli* data. The MDNRE reviews the data submitted quarterly from local health departments that receive BEACH Act grant funds.

BEACH Act grantees are required to submit beach monitoring and notification data to EPA by January 31 of each year. MDNRE already had developed a beach monitoring and notification database that they were using within the state to report beach health information to the public prior to receiving BEACH Act grant funds. The database is maintained in compliance with EPA BEACH Act data element requirements. In addition, the MDNRE's beach monitoring database complies with EPA's reporting requirements; MDNRE includes a summary of monitoring data in an annual report to the EPA according to reporting requirements and consistently submits its beach monitoring and notification data to EPA in a timely manner.



Michigan's 2009 Swimming Season Summary, with data on 564 beaches, 219 of which are monitored during the swimming season, is posted on EPA's Beach Watch website at [www.epa.gov/waterscience/beaches/seasons/2009/mi.html](http://www.epa.gov/waterscience/beaches/seasons/2009/mi.html).

**13. Commitment: Methods and assessment procedures:**

**Commitment Status:** This performance criterion, required of BEACH Act grantees, mandates development of detailed methods and assessment procedures for detecting levels of pathogen indicators in coastal waters that may be harmful to human health. The MI QAPP provides detailed methods and assessment procedures for measuring *E. coli* in surface waters. Local health departments are required to have approved QAPPs before using funds for beach water quality monitoring. QAPPs submitted by health departments are reviewed and approved by the MDNRE.

**14. Commitment: Public notification and risk communication plan:**

**Commitment Status:** This performance criterion requires BEACH Act grantees to develop a public notification and risk communication plan in accordance with EPA's *National Beach Guidance and Required Performance Criteria for Grants*. MDNRE's rules provide for the local health officer or an authorized representative of the local health department having jurisdiction to test and otherwise evaluate the quality of water at bathing beaches to determine whether the water is safe for bathing purposes. MDNRE is in compliance with this performance criterion.

MDNRE provides the public with access to the MDNRE's beach monitoring web site to find current and historical *E. coli* data for many of the beaches in Michigan. The Web site also provides information on the health risks associated with elevated *E. coli* levels, links to other pertinent websites, and contact information for the local health departments. Some of the local health departments have their own websites that provide information related to bacterial contamination of surface waters.

---

**From:** Benzie, Richard (DNRE)  
**Sent:** Friday, March 25, 2011 4:10 PM  
**To:** Cook, Pat (DEQ);Kris Philip;Shekter, Jean (DEQ);Howard, Brock (DEQ);Dettweiler, Dan (DEQ)  
**Subject:** FW: Information Needed to Support States on LCR Work Group  
**Attachments:** 9-22-09 copper tiering paper - FINAL DRAFT.doc; LCR SHM Presentation Master (11-2-10).pptx

Please try to accommodate this request. I can't do much by next Thursday, and Pat is out as well. At least get some data on the number of violations we have experienced and make an effort to answer the questions at the end of this message. Thanks.

---

**From:** Darrell Osterhoudt [<mailto:dosterhoudt@asdwa.org>]  
**Sent:** Friday, March 25, 2011 1:44 PM  
**To:** Darrell Osterhoudt  
**Subject:** Information Needed to Support States on LCR Work Group

Good afternoon state drinking water administrators -

As you know an EPA work group, including states (MA, IN, MO, NC, WA), is currently working on "long term" revisions to the Lead and Copper Rule (LCR). One of the major issues the group is trying to address is how to handle copper. The work group is considering many alternatives and the states on the group would like some feedback from you so they can present a reasonable alternative that reflects state interests.

Lead and copper behave differently in water systems yet are treated the same by the LCR. A summary of the issues and relevant research is included in the attached white paper on Copper. I have also attached some slides from last year's stakeholder meeting that briefly describes what the work group is considering. See slides 15 and 16 for the copper information.

For the benefit of the states on the work group, please share you thoughts on how copper might be handled in new rule revisions. First, how significant is copper for you under the current rule - action level exceedances compared to lead, etc. If the monitoring were to change to capture more sensitive sites for copper, would you expect a significant increase in work load.? Second, how would you suggest managing copper to improve public health protection? Some questions to consider here include: Does it need to be addressed separately from lead, especially related to monitoring? This might include completely separating the two or "decoupling". If specific copper sites are added, does that need to be offset by some reduction in lead samples? If so, how would reductions in lead samples being accomplished? Are there other considerations related to copper that should be considered?

Any feedback you can provide for this or other LCR issues will be appreciated. The work group is preparing for a face to face meeting in April. Please provide your input by March 31.

Thank you.

Have a good weekend.

Darrell Osterhoudt  
Regulatory Affairs Manager  
Association of State Drinking Water Administrators

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# **Lead and Copper Long-Term Regulatory Issues: White Paper on Tiering Criteria for Copper Sites**

## **Summary**

The purpose of this white paper is to provide EPA with additional information to help in the Agency's decision-making regarding the need for copper tiering revisions. The term "copper tiering" refers to the selection of LCR Tier 1 sampling sites that represent the highest copper levels in a water system. Recent evidence points to the possibility that current tiering requirements may be outdated, and may not target the highest risk copper monitoring locations. Information from this white paper and a companion paper on lead leaching studies provide background for a third white paper on possible options for revising the tiering criteria for lead and copper.

This paper provides an evaluation of sample collection sites that are expected to produce the highest copper levels within a system, with the age of the copper plumbing at a site being a primary consideration. Factors such as primary/secondary disinfection or corrosion control using orthophosphate are likely applied system-wide, so this does not help identify sites within the system that would be likely to have higher copper levels. However, the impact of orthophosphate treatment and disinfection on copper release may alter the expected relationships between copper pipe aging and copper release. Therefore, the factors that are discussed in this white paper include copper stagnation behavior, the presence of brass plumbing materials, and the impact of water quality and treatment conditions on copper release in drinking water systems. This paper also provides summary statistics for copper data that were collected for the Six-Year Review process, its limitations, and suggestions for future data collections.

Findings in this paper suggest that EPA may want to consider sampling strategy options that factor in the influence of stagnation time on copper release, plumbing age, and the influence of brass fixtures on LCR sampling, and conduct further research on the impacts of water quality on the relationship between plumbing age and copper release.

## **Background**

Current LCR sampling requirements classify homes with copper pipes installed after 1982, and before the lead ban (required in all jurisdictions in 1988), as Tier 1 or "high risk" sites. EPA's purpose in reevaluating the LCR Tier 1 requirements is to determine if the sites currently being sampled as Tier 1 sites (sites with a copper pipe age of 20-26 years) actually represent the sites with the highest probability of exceeding the LCR action level of 1.3 mg/L for copper.

## Summary of Relevant Research

This white paper includes a summary of literature published between 1995 and 2007 that provides research on copper corrosion in water systems in the U.S., Chile, and Australia. Authors of these corrosion studies used extensive literature reviews, laboratory experiments, pilot testing data, and USEPA LCR data to research these topics. A discussion of the copper data that were collected for the second Six-Year Review cycle, its limitations regarding sampling location data to allow for trend analysis related to lead levels and plumbing source contributions, and suggestions for future data collections are presented in a separate section.

### *Impact of Pipe Age on Copper Release*

**Schock, Lytle, and Clement (1995)** created a comprehensive “cupric hydroxide model” to combine factors that influence copper solubility in municipal drinking water with the goal of determining how to adjust pH and dissolved inorganic carbon (DIC) through water treatment to decrease copper solubility, also known as cuprosolvency. The cupric hydroxide model is an equilibrium model that predicts the transformation of the less soluble copper (I) compounds into the more soluble copper (II) compounds in the presence of oxidative conditions. The model provides a foundation for understanding the solubility of copper (II) compounds that are present in new copper pipes, and the process of copper pipe aging. Cupric hydroxide is a soluble copper solid that tends to be dominant in newer copper pipes. Over time, cupric hydroxide converts into copper compounds like malachite and tenorite, which are less soluble and tend to control copper solubility in aged copper pipes.

The authors also hoped to create a foundation for future research into the effects of other important solutes on cuprosolvency. To meet these goals, three sets of experiments were conducted:

1. *Coupon experiments* used Cincinnati tap water to test the effects of pH, orthophosphate, and metals on leaching from brass as summarized in Exhibit 1.

Exhibit 1. Experimental Design - “Coupon Experiments”		
Run No.	Treatment	Approximate pH
1	Tap water, unadjusted pH	8.5
2	Tap water, adjusted pH	7.0
3	Tap water + 3.0 mg/L phosphate ( $\text{PO}_4$ ), adjusted pH	7.5
4	Tap water + 0.5 mg/L $\text{PO}_4$ , adjusted pH	7.5
5	Tap water, adjusted pH	7.5

After 250 days of operation, the samples in the coupon experiment were subjected to various stagnation durations and then the drinking water and scales were analyzed. The chlorine residual levels were depleted in just a few hours but this rate of depletion decreased over time. Also, copper levels after 72 hours of stagnation (over a weekend) were consistently higher than the copper levels after 24 hours of stagnation. The first experiment had a high concentration of sulfate and did not have a strongly adhering cupric hydroxide layer. Runs 2, 4, and 5 were consistent with the model of copper solubility being controlled by cupric hydroxide. Run 3 may have been dominated by

cupric hydroxide or by a variation of cupric orthophosphate. The results did not clearly fit the cupric hydroxide model, nor did they indicate malachite formation, a very low solubility copper compound.

2. *Single-pass pipe experiments (in which water flows to waste after stagnation and is not recirculated)* were conducted for various stagnation experiments and to compare the copper concentrations measured with free chlorine residual depletion and decreasing dissolved oxygen (DO). These experiments used filtered tap water to reduce total organic carbon (TOC) and chlorine. The single-pass pipe experiment found that chlorine was the primary oxidant, followed by dissolved oxygen. Copper levels continued to increase up until 50 hours stagnation, consuming about 85 percent of the available free chlorine, and then began to decline as oxygen levels started to drop. Although pipe reactions consumed chlorine, a small amount of chlorine remained after 72 hours stagnation.
3. *Recirculation experiments* tested the interaction among copper solubility, pH, and DIC under controlled laboratory conditions. Monitoring included twice-weekly free chlorine residual with the addition of sodium hypochlorite as needed, weekly pH adjustment as needed, and complete water analysis once per month, at the beginning and end of the study. The recirculation solubility experiment determined that experiments with DIC = 5 mg C/L at pH 7, 8, and 9 were all controlled primarily by cupric hydroxide, as opposed to malachite or tenorite.

Schock, Lytle, and Clement (1995) also evaluated an existing study from California that estimated residential plumbing as a source of metal contamination to the influent of wastewater treatment plants. In this study, standing samples were collected at 60 homes served by two different water utilities. The samples were collected to target the copper piping in the homes, i.e. after a stagnation period, the first 500 mL of water was wasted (water that had resided in the faucet and adjoining piping) and the next 1000 mL of water was collected for analysis (water that had resided in the copper piping in the home). The stagnation period for these samples ranged from 6 to 14 hours. The age of the copper piping in each home varied from 1 to 72 years. The copper levels measured were divided by the stagnation time of the sample to obtain a copper release rate, and this rate was graphed according to age of piping at each site. Results indicated that the highest copper release rates were observed in copper piping that was less than 10 years old. There was also a trend towards lower copper release as pipes aged, for pipes less than 20 year old (see Exhibit 2). For older pipe (>20 – 72 years old), there was no apparent relationship between copper release rate and pipe age. The two water systems studied had different water qualities, and the effect of these different water chemistries on copper release was also evident, with one water (EBMUD) exhibiting lower copper release from new copper pipes when compared to the other water (CCWD).

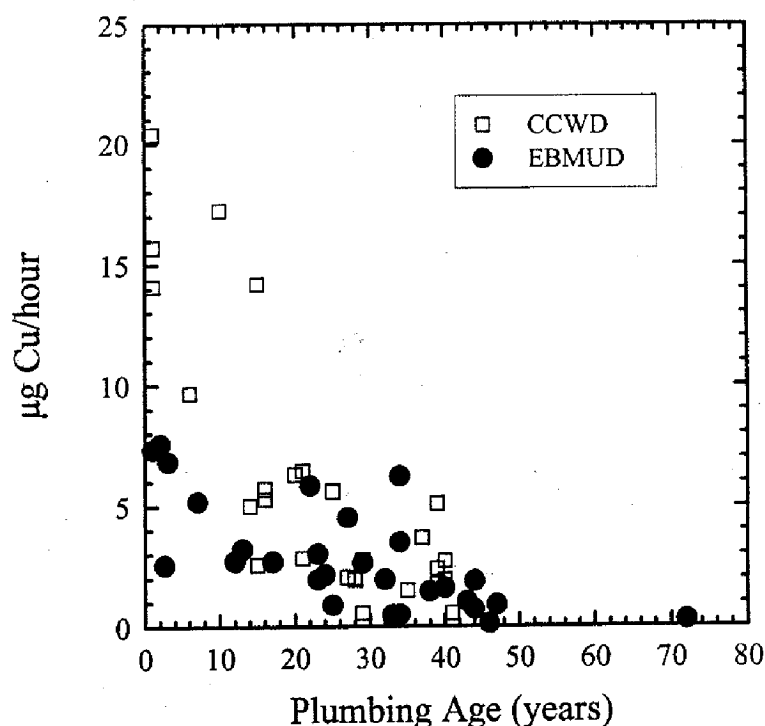


Exhibit 2. Distribution of adjusted copper leaching rates versus age of plumbing for one litre samples (from Schock, M.R., D.A. Lytle, and J.A. Clement. 1995)

In conclusion, Schock, Lytle, and Clement (1995) used the cupric hydroxide model and laboratory experiments to establish experimental corroboration that there is an “aging” phenomenon that causes a great dependency of copper levels on the age of the plumbing at different stagnation times. Specific findings include the following:

- DIC levels have varying impacts on cuprosolvency depending on pH, carbon levels, and other factors. DIC levels can increase copper solubility under the following conditions: 1) when cupric hydroxide or cupric oxide control copper solubility, which would be favored at high pH with new pipe), and 2) the pH is greater than 6.5, and carbon concentrations are less than 20 mg/L. If these conditions are not met, moderate levels of DIC may help malachite and tenorite to form, actually decreasing copper solubility. Higher DIC also helps to maintain buffer intensity, which helps to keep pH levels stable.
- The cupric hydroxide solubility model can be less accurate at some pH levels. The model tends to predict lower copper solubility in drinking water that is between 8.5 and 10 pH than the copper solubility that has been observed in experiments.
- According to the model, copper levels present in the tap water after a 6 to 8 hour stagnation period should decrease over time due to cupric hydroxide recrystallizing and dehydrating to form tenorite, with malachite forming at a lower pH. In the absence of orthophosphate treatment, new copper pipes (ages 6 months to 2 years in general) tend to follow a cupric hydroxide model. In pipes older than about 2 years, the impact of pH and DIC on cuprosolvency will be smaller than newer pipes or experimental systems.

- The model predicts that orthophosphate is effective at decreasing copper solubility at a pH of between 6.5 and 7.0. For pH of 8, about 3-5 mg/L of phosphate ( $\text{PO}_4$ ) are required, while at pH 7, only 1-3 mg/L of  $\text{PO}_4$  are needed. However, at a pH above 6.5, orthophosphate treatment may be less effective at lowering copper levels in drinking water over the long term than aged copper pipe without this treatment (Schock, Lytle and Clement 1995).
- Upon depletion of oxidants in the water (chlorine, dissolved oxygen), the copper levels were noted to start dropping. This phenomenon has been observed by several research groups, and has been attributed (usually) to either of two mechanisms: Electrochemical reduction of Cu(II) to Cu(I) at the pipe surface, and hence  $\text{Cu}_2\text{O}$  formation; or, more complete formation of malachite which removes more suspended colloidal Cu(II) material from solution.
- Copper solubility models can be a helpful tool for water systems attempting to determine a treatment strategy for cuprosolvency since several different variables can affect reduction and oxidation (redox) conditions in copper plumbing. For example, oxidizing agents like chlorine and chloramines can increase copper solubility and increase the presence of copper (II) versus copper (I) aqueous species in the drinking water.
- In general, newer copper pipe, unstable pH levels, and dead ends in the distribution system are all risk factors for high copper in drinking water.

Additional model evaluations, as well as comparisons between model outputs and real-world copper results should be completed to understand the relationships among water quality, treatment, and expected copper solubility. This will provide additional information with which to understand water quality and treatment scenarios that are most appropriate for reducing copper levels from new copper pipe versus older copper pipe.

Edwards, et al (2001) examined the effects of pipe aging on lead and copper release using a “dump and fill” pipe test. Lead and copper pipes of different ages were used in the evaluation (~3 years, 6 months, 2 weeks). The pipes were filled with test water (Boulder, CO tap water adjusted to various pH and alkalinity levels), and samples were collected after 72 hours stagnation for corrosion by-product release (lead or copper). Results indicated that copper release was lower in aged pipe in low pH and high alkalinity water (pH 7.2, alkalinity 300 mg/L as  $\text{CaCO}_3$ ) when compared to newer pipe under the same water quality conditions. Copper levels decreased from 5.5 mg/L to 0.3 mg/L after 120 days aging under the higher alkalinity conditions. For lead, lead levels dropped an order of magnitude as the pipe aged from 4 months to 3 years in pH 7.2, alkalinity 15 mg/L as  $\text{CaCO}_3$  water. At higher alkalinities, lead levels did not decrease as substantially as the pipe aged.

**Turek et al. (2006)** investigated the effect of pipe age on copper corrosion in a drinking water distribution system based on the hypothesis that newer copper plumbing would contain water with higher copper levels than older copper plumbing. This research sought to improve upon the current “cupric hydroxide model” developed by Schock, Lytle, and Clement (1995) by providing data from an actual distribution system. Findings clearly indicate that copper levels are dependent on plumbing age across the many sites sampled with the same background water chemistry and treatment history.



Researchers sampled the copper levels and scale deposits of cold water distribution pipes in 16 buildings with pipe ages ranging from less than 1 year to 44 years old. Each of these buildings were served by the same water source and distribution system. Two, 250-mL samples were collected after 16 hours of stagnation. The first 250 mL sample (i.e., the first draw) was considered to represent the water in contact with the faucet, and the second 250 mL sample (i.e., the second-draw sample) to be representative of the water that had been in contact with the copper pipe. The water samples were analyzed for copper concentration, pH, total inorganic carbon, and 13 other inorganic analytes. The authors found that there was a high degree of variability in copper levels in both the 250 mL first- and second-draw samples, but observed a decreasing trend in copper levels with age, particularly with the second-draw samples. The authors deduced from the second-draw data that with each year a copper pipe ages, the copper concentration of water will drop by an average of 0.050 mg/L.

After examining the copper pipe sections by x-ray diffraction (XRD) and x-ray photoelectron spectroscopy (XPS), the researchers noted large variation in the types of scales among the samples. They also found stable scale such as malachite and relatively instable solids such as cupric hydroxide in pipes irrespective of age. In many samples cupric hydroxide and cuprite appeared on the surface of the scale while malachite was in bulk. Copper cyanide was also found in two pipe scale samples. Other indications of aging were less uniform. XPS, which can detect surface-level characteristics of a material, found cupric hydroxide or cuprous oxide on the surface of many pipes. XRD can identify materials through all depths of a substance. XRD did not detect any cupric hydroxide or cuprous oxide, but identified malachite in the bulk scale (core layer). It is possible that copper hydroxide dominated the surface area, controlling the interaction between solid copper and water, while a mixture of malachite and other compounds made up the bulk scale. They concluded that pipes under five years old tended to have incomplete scale coverage, while the older pipe had more complete scale coverage.

**Lagos, Cuadrado and Letelier (2001)** used thermodynamic models to correlate experimental and field data for copper in drinking water with copper-containing scales on the inner walls of pipes. The researchers focused on the effect of pipe age in copper corrosion and scale composition. The three main studies they carried out were:

- Characterization of the inner scales from pipe samples >30 years old, using XRD and optical microscopy to identify the type of copper solids present in scale.
- Short-term aging experiments of copper pipe coupons.
- Characterization of plumbing systems and drinking water at home taps to provide input into the models. Survey data for plumbing systems included pipe material, age and length. Water quality data included soluble and total copper for stagnant and running water samples, pH, and conductivity.

The researchers found that by grouping data by the solid that was predicted to control solubility, the average copper concentration in an 8-hour stagnant sample decreased linearly with the average pipe age. They noted a hierarchy for the solubility and age of the pipe films as follows: langite was found to be the most soluble solid and the “youngest film”, followed by cupric hydroxide, azurite, brochantite, malachite, and tennantite (which is 16 times less soluble than

langite). However, the researchers indicated that this hierarchy could vary depending on water quality characteristics. For example, langite is predicted to be less soluble than cupric hydroxide in high sulfate waters, which would result in cupric hydroxide aging to langite. Therefore, the solids that are predicted to precipitate represent an ‘order of solubility’ for these minerals that is dependent on pH, alkalinity, sulfate and other water quality characteristics, rather than an evolution of the composition of the scale in a specific water system over time.

### ***Effect of Stagnation Time on Copper Release and Comparisons to Lead Release***

**Schock et al. 1996** summarized a variety of historical studies related to the influence of stagnation time on lead level results. These included pipe loop studies of lead behavior under different stagnation times, development of models to estimate lead level concentrations after stagnation, and comparisons of standing lead level data collected from pipe loops and consumer taps with model estimations. Of these studies, Kuch and Wagner (1981, 1983) developed a key statistical model that describes the radial diffusion of lead under stagnation conditions. This model used the following data inputs: pipe diameter, a diffusion coefficient for  $Pb^{2+}$ , the maximum equilibrium lead concentration, the lead concentration during flushing, and a mass transfer coefficient ( $\beta\alpha$ ). This model was applied to USEPA pilot study data collected during varying stagnation periods. The model predicted that lead levels would be within 8% of equilibrium maximum values after 8 hours of stagnation (Schock and Gardels 1983). Schock and Gardels (1983) also found that lead levels measured after 7-9 hours of stagnation varied little from lead levels measured after 21-88 hours, indicating that maximum equilibrium lead concentrations can be reached in ‘overnight’ stagnation samples. In tap sample results obtained by the University of North Carolina’s Environmental Quality Institute (UNC-EQI), researchers found that for residences where high lead levels had been measured, 34% of the lead level was attained after 15 minutes stagnation, and plumbing systems between 3-10 years old (as of 1990) had the highest lead levels (Mass and Patch 1990a, 1990b; Maas et al. 1991).

**Sorg et al. 1999** varied standing times in a pipe loop study designed to evaluate differences in lead and copper levels in softened and non-softened water (pH ~7.3, alkalinity ~261 mg/L as  $CaCO_3$ ). There was no significant difference in the pH and alkalinity of the softened and non-softened water. The primary water quality difference between the softened and non-softened water was in concentrations of calcium, magnesium, potassium, and sodium. They found that lead levels increased rapidly up to 10 hours, then peaked after ~ 10 hours stagnation, whereas copper levels reached a maximum at ~ 20-25 hours of stagnation. In softened water, copper concentrations increased to maximum levels of 4.4 and 6.8 mg/L after about 20-25 hrs of standing time, then dropped to 0.5 mg/L after 72-92 hrs. In non-softened water, copper concentrations increased more sharply and reached maximum values in less than 8 hours. After peaking, they decreased gradually to < 2 mg/L after 72-92 hours. In both cases, the reduction in copper concentration after longer stagnation periods corresponded to lower dissolved oxygen (DO) levels (~ 1 mg/L).

**Lytle and Schock 2000** described an additional study that also demonstrated that copper levels increased rapidly with the stagnation time of the water. This study utilized a flow through pipe loop using type M copper pipe and Cincinnati tap water (pH = 7.5, alkalinity = 47 mg/L as  $CaCO_3$ ). The study differed from the Sorg et al. (1999) study in that chlorine as well as dissolved oxygen was present in the test water. Results showed that copper concentrations increased with stagnation time even beyond 24 hours, with the steepest increases occurring

during the first 20 hours of stagnation. Free chlorine decreased rapidly and was depleted by 10-20 hours, whereas the dissolved oxygen level did not decrease during this time period. The authors hypothesized that reductions in copper concentrations with longer standing times were not observed because an oxidant was always present at the end of the stagnation period.

The authors also developed a radial molecular diffusion model to calculate copper concentrations leached from pipes over time. Copper stagnation profiles developed from the study described above were plotted against the theoretical curves developed using the model (see Exhibit 3), and demonstrated good agreement as long as the mass transfer coefficient was considered ( $\beta a$ ).

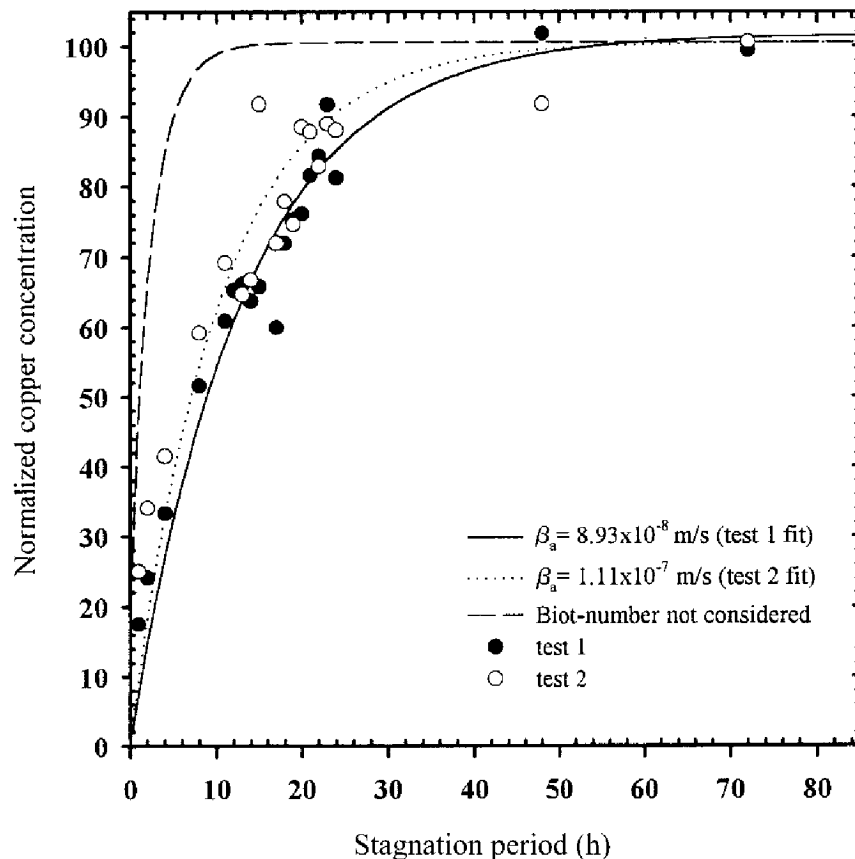


Exhibit 3. Experimental copper stagnation profile data plotted with theoretical curves (from Lytle and Schock 2000).

**Merkel, et al. (2002)** conducted copper pipe-rig studies where copper levels were measured on samples collected after various stagnation times. Stagnation curves were developed which indicated that the concentration of dissolved copper rose to a maximum after approximately 10 hours, and then decreased. The maximum dissolved copper levels measured decreased over time from 2.5 mg/L in week 9 of the experiments, to 1 mg/L in week 14. **Merkel and Pehkonen (2006)** conducted a literature review of current background information and mechanistic understandings of copper corrosion. They summarized a pipe rig study designed to evaluate copper levels measured at different temperatures and various stagnation periods. Normalized

copper concentrations measured during this pipe rig stagnation study demonstrated that the highest normalized copper concentrations were measured at ~ 24 hours stagnation.

**Lehtola, et al 2007** studied the impacts of stagnation time on copper levels in a pilot distribution system (water quality characteristics were not given) and found that copper levels increased from ~0.4 mg/L at 40 minutes stagnation to ~ 0.6 mg/L at 4 hours stagnation. Only minor increases in copper concentrations were measured after 15-2/3 hours stagnation, when compared to copper levels measured after 4 hours stagnation.

In summary, stagnation time effects on copper release differ from stagnation effects on lead release, and copper behavior appears to be more complex in stagnant water. Lead levels will increase with increasing stagnation period, up to a level that approaches the theoretical maximum at stagnation times of ~ 8 hours. Copper levels will initially increase, and can continue to increase up to stagnation times of ~24 hours. Copper concentrations in water at stagnation periods longer than 24 hours can decrease, or continue to increase, depending on the oxidant levels. If oxidant levels are maintained in the water, copper levels can continue to increase under stagnation periods longer than 24 hours. If oxidant levels decrease to below 1 mg/L (for dissolved oxygen), copper levels can significantly decline under longer stagnation periods.

### *Effect of Brass on Copper Release*

**In the Turek et al. (2006)** study discussed previously, sequential sampling of stagnant tap water samples was also conducted to try to separate out the effect of brass or other alloy fixtures from the effect of the pure copper pipes in the distribution system. After 16 hours of stagnation, one 30-mL sample, followed by six 60-mL samples were collected. The sequential sampling showed a sharp decrease in the copper levels after about 200 mL which may suggest that the initial experiment's first draw samples of 250 mL reflected the effect of brass or alloy faucet materials, while the second-draw samples portrayed the effect of copper pipes in the distribution system.

The authors emphasized the importance of sample size, and used the sequential testing data to determine various copper concentrations based on sample size. They deduced that if the sample size was 30-mL, the reported copper concentration would be close to 1.3 mg/L. However, if 420-mL were sampled, the concentration would only be about 0.6 mg/L. In general they found that increasing the volume of samples after stagnation caused the reported copper concentrations to decrease.

**Lytle and Schock (1997)** conducted a study to: 1) determine the relationship between the levels of various metals in six different brass alloys and the metals each material would leach into drinking water, and; 2) test the effect of pH at levels of 7.0 and 8.5 on different types of metal leaching. The authors conducted experiments using metal coupons and a recirculation system with tap water from Cincinnati, Ohio. The metals included pure copper, zinc, and lead, as well as six different types of brass. Brass is a type of copper alloy that contains between 5 and 40 percent zinc, but can also contain tin, iron, aluminum, nickel, and silicon. Brasses that contain more than 20 percent zinc are referred to as "yellow brasses" while "red brasses" contain less than 15 percent zinc.

The pure copper coupon leached more copper at a pH of 7 than at a pH of 8.5. At a pH of 7, the copper level was initially measured at 1 mg/L, peaked at 4 mg/L at 40 days, and dropped back

down to its original level at 160 days. The copper levels at a pH of 7 continued to decrease after the official experiment finished. At a pH of 8.5, the initial copper was lower at 0.5 mg/L, and dropped to 0.25 mg/L by 120 days. Unlike the test at pH 7, the test at a pH of 8.5 was stable by 80 days. For detailed graphical results, and tables describing the composition of brass coupon samples, see full text of Lytle and Schock (1997).

The study demonstrated that the composition of the brass alloy played a large role in the amount of copper that leached from the metal samples at pH 8.5. The red brasses leached more copper than the yellow brasses, with a copper concentration similar to the pure copper coupon by the end of the study. At a pH of 7, the effect was less orderly, although red brasses proved more likely to leach higher amounts of copper than yellow brasses.

**Kimbrough's study (2001)** examined several questions regarding the role of brass fixtures in lead and copper corrosion:

- Is brass a temporary source of lead as suggested by EPA in the preamble to the LCR?
- Are corrosion control treatment strategies for lead and copper effective for brass corrosion?
- What proportion of lead and copper in monitoring data comes from brass plumbing fixtures?
- Are the predictions of “high risk” sites in the LCR valid?

Kimbrough conducted a four-fold study to address these questions, as described below.

The first experiment evaluated routine LCR monitoring data from seven water districts (five water suppliers) in Southern California. Samples were collected from homes built between 1982 and 1986 with no lead plumbing, no corrosion control other than pH adjustment, and no lead service lines. The author hypothesized that if the 1 liter first-flush samples showed signs of brass corrosion (indicated by the presence of copper, lead, zinc, and nickel), then interior brass plumbing fixtures would be the likely source of the corrosion. The results showed that every sample contained either copper or zinc, and all but one sample contained copper with zinc, nickel, or lead. A majority of the samples contained at least some copper. Furthermore, samples contained similar proportions of copper to zinc and nickel to lead, which also occurs with brass corrosion.

The results of the first experiment suggest that dezincification was occurring. Dezincification is the preferential dissolution of zinc, which is the most common form of brass corrosion. In this experiment, samples with high zinc levels (greater than 200 µg/L) had low concentrations of copper (less than 50 µg/L) and samples with high copper concentrations had much lower zinc concentrations. Since most household plumbing consists of yellow brass (more than 20 percent zinc), it would stand to reason that at least some of the samples were undergoing dezincification, leaching their zinc metal into solution. The authors hypothesized that the samples with high copper and low zinc were from yellow brasses that were already depleted in zinc, lead and nickel, or that the brass was manufactured differently from ordinary yellow brass.

During the second experiment, sampling was conducted at taps that were the source of consumer complaints of blue water and stains. The sampled homes were built after 1990. In each sample, copper and zinc, the main constituents of brass, were dominant. Lead and nickel, other common components of brass, were also present, but at lower concentrations. One of the blue water/stain complaints was associated with a brass hose bib. The researchers tested the water coming from the hose after standing overnight and found the largest proportions of copper, zinc, nickel and lead from the first liter of water (zinc and nickel were highest in the first 100 mL). Kimbrough found very little copper after the first liter, which suggests the dominant influence was from the brass hose bib rather than from other plumbing materials that were further away from the sample tap. The lab sink and public bathroom samples showed similar results, but the toilet influent blue water complaint did not follow the pattern of the other samples and showed a greater influence from the copper piping.

For the third experiment, Kimbrough investigated long-term LCR monitoring results from the city of Santa Monica, California. From 1992 to 1998, the mean, median, and 95<sup>th</sup> percentile copper and lead concentrations declined significantly over time. However, the maximum concentration did not decline as readily. Kimbrough hypothesized that this could be due to the homes being at least 10 years old at the time of first sampling. He further hypothesized that if the source of most of the copper and lead was the corrosion of brass fittings, then the average levels of these metals would decrease, but the frequent replacement of brass fixtures would cause individual spikes in lead and copper levels.

The fourth part of the study took place in the spring of 1997. Members and employees of the Castaic Lake Water Agency (CLWA) collected first-draw samples from their homes (for a total of 17 samples). Most of the homes were built since 1990 or had replaced pipes in that timeframe, which means that these would normally be considered low-risk for LCR monitoring. Again, the proportions of zinc, copper, lead and nickel were indicative of brass corrosion and dezincification. Though the number of samples collected was too small to provide a conclusive result, the results point to evidence that brass corrosion is not a problem that is limited to houses built prior to the lead ban.

Kimbrough (2001) concluded that LCR monitoring should be conducted at sampling sites that represent newer plumbing, rather than the same older homes that have been shown to have stable water chemistry. Additionally, he concluded that the dezincification of yellow brass can be a major contributor to lead and copper in LCR samples.

In a more recent study, **Kimbrough (2007)** tested the effectiveness of the bans on leaded brass and lead solder in plumbing, as well as the lead leaching standards implemented by the National Sanitation Foundation (NSF). He discussed the possibility that brass corrosion could be the main source of lead and copper found in first-draw LCR monitoring results.

The study compared two sets of tap water samples: one set represented all-plastic plumbing and one set represented traditional plumbing. The sample set representing all-plastic plumbing were collected from a single housing development, built between 2003 and 2005, that was supplied by a new PWS with ductile iron water mains, copper service lines, “lead-free” brass meter components, and all-plastic plumbing from the meter to the tap. Kimbrough estimated that since first-draw samples measure the first liter of water, they only account for water in contact with the faucet and about a meter of pipe. At this short distance, the interior brass fixtures were the only

likely source of lead and copper in first-draw samples. The set of samples representative of traditional plumbing were collected from the same single family homes used in his 2001 study. The homes were built between 1920 and 2005 but primarily after 1986, and used galvanized steel or copper plumbing with interior brass fixtures. Because of the range of ages, some of these homes may have contained copper plumbing with lead solder.

LCR monitoring was conducted in the traditional homes during 1990, 1995, and 2002. The results of the samples collected from the traditionally plumbed homes were compared with three sets of samples from the all-plastic system (26 collected in summer 2005; 18 in winter 2005, and 20 in spring 2006). The 26 samples collected in summer 2005 included 23 initial samples and 3 repeat samples at sites that tested above the lead action level. The winter 2005 samples were limited to the 18 sites identified as “low-concentration sites” in order to “determine the stability of these locations”. The spring 2006 sites consisted of the 23 original sample sites minus the 3 that had exceeded the lead action level during summer 2005.

The mean and median concentrations for copper, zinc, nickel, and lead were higher in the Summer 2005 samples from the all-plastic homes than the traditional ones (see Exhibit 4 for a comparison of medians). In subsequent sampling, these levels were similar to samples collected from the traditional homes. In addition, the relationship of these elements was similar for both all-plastic and traditional systems in which copper and zinc showed an inverse relationship and samples with high zinc concentrations generally had higher lead and nickel concentrations, which is indicative of dezincification.

<b>Exhibit 4: Comparison of Medians for Traditional and All-plastic Systems</b>				
<b>Element</b>	<b>Traditional System (n = 281) µg/L</b>	<b>All-plastic System</b>		
		<b>Summer 2005 (n = 26) µg/L</b>	<b>Winter 2005 (n = 18) µg/L</b>	<b>Spring 2006 (n = 20) µg/L</b>
Copper	95	185	85	81
Zinc	64	191	106	66
Nickel	3.0	4.9	3.0	5.0
Lead	1.9	5.5	1.3	0.8
<i>n</i> — number of samples				

Source: Table 5, Kimbrough 2007.

The author stated that the data were consistent with the prediction that lead and copper found in the all-plastic system would be from corrosion of brass fixtures, and suggested that a majority of lead and copper in routine tap water monitoring may come from brass sources. Kimbrough questioned the Agency’s sampling and tiering procedures that focus on older homes (built before 1986) with leaded solder; rely on first-draw samples which only demonstrate the corrosion from a small length of pipe; and focus on lead action level exceedances even though copper action level exceedances can be more common. For example, in California, copper action level exceedances constitute 60 to 70 percent of all LCR action level exceedances.<sup>1</sup>

Another recent study (Kimbrough 2009) examined the occurrence of these same four elements (copper, zinc, nickel and lead) in the influent sewage to two waste water treatment plants. These

<sup>1</sup> Cited in Kimbrough, 2007 as Walker, L. 2007. Personal Communication.

data, as well as LCR data from six systems in the Upper Santa Clara River Valley (USCRV) in southern California (including one system with all plastic premise piping), were used to evaluate if brass corrosion were a significant source of these metals in the influent to the sewage treatment plants. These wastewater treatment plants serve a large proportion of the population that was provided drinking water from the six systems in the USCRV. The two most probable sources of copper and non-copper elements (zinc, nickel and lead) in the influent to the wastewater treatment plants were identified as corrosion of plumbing materials, and soil. Data sets evaluated included influent metals level data from 1975 through 2005 for the two wastewater treatment plants, LCR results from the six systems for four samples periods (1998, 2003, 2005, and 2006), and concentrations of these metals in 50 California soils. LCR samples were 1 liter in volume collected after a minimum of 6 hours standing time. LCR data were collected at sites selected according to the tiering criteria in the LCR, and these systems had no history of lead service lines or lead pipe used in premise piping. The LCR 2005 data set consisted of houses with all plastic premise piping, with the exception of brass used in faucets. LCR samples were analyzed for zinc and nickel in addition to lead and copper.

Results provide additional verification that brass corrosion is likely the major source of copper, zinc, lead and nickel levels in the influent to the wastewater treatment plant. The ratios of the median concentrations of these elements were similar for the LCR sample sets and the samples sets representing the influent to the wastewater treatment plant, and were also similar to the ratio of these elements in the composition of brasses used in plumbing, whereas the ratios of these elements in samples from 50 California soils were different. Concentrations of lead, nickel, and zinc were lower and copper levels were higher in the LCR samples when compared to samples from the influent to the wastewater treatment plants, however. The author suggests that this is evidence that results from the LCR sites exhibit late phase brass corrosion in which release of copper is dominant, compared to early phase brass corrosion where release of non-copper elements are dominant (dezincification). These results indicate that the age of brass materials may impact the amount of copper released, with newer brass releasing less copper (dezincification) than older brass.

The authors of an Australian study (**Rajaratnam, Winder, and An, 2002**) evaluated the effects of household plumbing on drinking water quality in the City of Sydney. Australian plumbing systems consist of copper or galvanized iron pipes as lead pipes were no longer used beginning in the 1930s and lead-based solder was banned in 1989. Although lead is no longer used, lead and copper corrosion can still occur from sources such as brass and bronze fittings, tin/lead solder, goosenecks, gaskets, and recycled copper tubing.

Water samples were collected from 95 new homes (< 18 months old) in 10 Sydney suburbs and analyzed for lead, copper, manganese, zinc, cadmium and aluminum. The control samples collected from the distribution system had metal concentrations significantly below the Australian Drinking Water Guidelines (ADWG) levels, with two exceptions out of the 23 samples sites. After an overnight stagnation period, researchers took 125 mL first-flush samples, followed by 1 L post-first flush samples, then took another 125 mL sample of fully-flushed water after it had run for 2 minutes. First-flush household samples contained significantly greater amounts of metals compared to post-first-flush and fully flushed samples. Sixty percent of the first-flush samples exceeded the ADWG value for lead (10 µg/L); 12 percent were above the ADWG value for copper (1,000 µg/L); and only one sample was above the ADWG limit for zinc (3,000 µg/L). The researchers concluded that the low levels of metals in the control samples



compared to the household samples, and the higher levels of metals (lead and zinc in particular) in first-flush samples, suggest the influence of household brass fittings.

### *Effect of Orthophosphate Treatment on the Copper Aging Process*

Several studies present data that suggests that without phosphate addition, the copper scales (and hence, copper levels in the water) can “age” dramatically in even a few months or a small number of years, followed by a very prolonged aging process.

The literature documents that orthophosphate can reduce copper levels in the short term. Almost within days of its first application, orthophosphate appears to “freeze” copper levels on new copper plumbing. The trade-off is that those copper levels are unlikely to keep going down by the factor of 50, 100, or more over the decades that occurs with “natural” aging of the oxide, hydroxide and hydroxycarbonate scales (copper pipe that is not exposed to orthophosphate).

**Edwards et al., (2001)** investigated what constituents of household drinking water could be attributed to an increased duration of copper solubility over time and the increased risk of high copper concentration in drinking water. The cupric hydroxide solubility model, for example, would predict that copper aging would lead to a decrease in copper solubility over the course of several months to years. Through a series of solubility studies, the authors examined the effect of natural organic matter (NOM), bicarbonate, sulfate, and orthophosphate on copper solubility.

The laboratory solubility experiments were modeled after the protocol in Himdi and Edwards (1999)<sup>2</sup>. The experiments were designed to test the role of various anions on the precipitation and aging of copper solids such as brochantite, malachite, etc. The researchers wanted to test whether anions added to drinking water could stabilize solid copper, making it less soluble and less likely to dissolve into drinking water. Each experiment began with a solution of cupric nitrate and sodium nitrate. The first experiment tested the effect of the addition of sodium bicarbonate ( $\text{NaHCO}_3$ ), sodium sulfate ( $\text{Na}_2\text{SO}_4$ ), or sodium phosphate ( $\text{Na}_3\text{PO}_4$ ) on fresh experimental solution. The second experiment measured the effect of the same anions on cupric hydroxide, which was synthesized in the laboratory. Cupric hydroxide was present in this experiment to demonstrate a common form of soluble copper solid that forms on copper pipes after a short period of aging. The third experiment was a slightly modified version of the first. Researchers used various analytical techniques such as XRD, inductive coupled plasma-emission spectroscopy, spectrophotometry, and other inorganic laboratory techniques to characterize the copper compounds that resulted from each experiment.

The addition of anions followed by aging in the laboratory led to the precipitation of copper solids with varying degrees of solubility. In the first and third experiments, the presence of sulfate ( $\text{SO}_4^{2-}$ ) caused a low solubility brochantite to precipitate; bicarbonate ( $\text{HCO}_3^-$ ) led to the formation of moderately soluble malachite; and orthophosphate ( $\text{PO}_4^{3-}$ ) led to the formation of a soluble amorphous copper compound. All of the experimental samples quickly caused a decrease in copper concentrations; however, over the long term (100 hours in the laboratory), the samples with anions did not contain as low a level of copper as the negative control, suggesting that aging in the absence of treatment produces the most stable copper scale.

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<sup>2</sup> Himdi, L.H. and Edwards, M. 1999. The solubility of cupric hydroxide. *Env. Sci. Tech.*, 33(15):2607-2610.

In the second experiment, the effect of  $\text{NaHCO}_3$ ,  $\text{Na}_2\text{SO}_4$ , or  $\text{Na}_3\text{PO}_4$  on already-formed cupric hydroxide was measured. The treatment with bicarbonate caused the cupric hydroxide that had been aged for 2 hours to convert partially into malachite after one hour; and after one month, the bicarbonate formed malachite and tenorite. The presence of sulfate converted the cupric hydroxide into less soluble brochantite or malachite after just one hour. Orthophosphate lowered copper levels in the water samples, but x-ray diffraction analysis revealed an amorphous copper phosphate with a layer of cupric hydroxide underneath, indicating incomplete transformation.

Edwards et al. (2001) concluded that the presence of certain anions such as sulfate, bicarbonate, and orthophosphate caused an immediate decrease in copper levels in water samples. However, they also found that cupric sulfate and cupric phosphate could prevent the formation of insoluble tenorite or malachite, effectively increasing the concentration of soluble copper over the long term. The effect of these anions can depend on their concentration and rate of solids precipitation. For example, low sulfate concentrations enhance the transition of cupric hydroxide to tenorite, while higher sulfate levels can prohibit the transition.

**Schock and Sandvig (2006)** examined the cupric hydroxide model and studied the effect of orthophosphate treatment on copper pipe aging and copper solubility. The research compared data generated from laboratory studies at U.S. EPA in Cincinnati, pilot studies at a water treatment plant in Indian Hill, Ohio, and LCR monitoring data from four field locations.

Indian Hill Water Works in Indian Hill, Ohio uses groundwater supplies with treatment including water softening with cation exchange, chlorination, fluoridation, and at different times, pH adjustment with caustic and/or addition of a corrosion inhibitor. The finished water has a pH range of 7.1-7.5 and typical pH of 7.3, hardness of 150 mg/L as  $\text{CaCO}_3$ , alkalinity of 250 mg/L as  $\text{CaCO}_3$  and DIC of 60-65 mg C/L. All LCR monitoring sites represented lead soldered copper sites and most represented Tier 1 sites. Zinc orthophosphate treatment, initiated in the late 1980s, resulted in 90<sup>th</sup> percentile copper levels of 1.63 mg/L (1992) and 1.54 mg/L (1997). After conducting pilot studies in 1998 to identify treatment improvements, orthophosphate treatment (orthophosphate residual of 3 mg/L as  $\text{PO}_4$ ) was initiated at the start of 1999. The 90<sup>th</sup> percentiles dropped immediately to 1.04 mg/L (same result for October 1999 and April/May 2000 LCR monitoring) and remained extremely constant even as sampling changed to reduced monitoring over the next several years.

Schock and Sandvig (2006) found that study results supported the cupric hydroxide copper solubility model. In the short term, cupric hydroxide, or another highly soluble copper compound was predominant while over time, it was replaced by a more crystalline and less soluble tenorite or malachite. Schock and Sandvig found that orthophosphate effectively reduced copper levels in the short term. However, over the long term, even compared with orthophosphate treatment, the lowest levels of copper corrosion were achieved through the copper aging process in the absence of orthophosphate.

Also as part of the study, Schock and Sandvig (2006) compared long-term LCR monitoring data from Tier 1 sites which contained lead service lines and Tier 1 sites that did not contain lead service lines (i.e., they contained lead soldered copper piping that was installed after 1982). Of the total of 188 sites, 170 sites contained lead service lines and the remaining 18 were lead soldered copper sites. The 90<sup>th</sup> percentile copper level based on all 188 samples was 1.63 mg/L. The 90<sup>th</sup> percentile copper level for the 170 sites served by LSLs was 1.4 mg/L, compared to a

90<sup>th</sup> percentile copper level of 2.35 mg/L from the lead soldered copper sites. Copper levels collected from sites with lead soldered copper pipes were higher than samples collected from sites with lead service lines. The LSL sites likely contained older copper piping (i.e. 40-50 years old if it was installed at the same time as the service). This comparison indicates that the current LCR tap sampling protocol of collecting both lead and copper compliance samples from Tier 1 sites may not adequately capture high risk copper sites. Based on the results of this study, EPA may wish to use separate tiering criteria for collection of lead and copper samples. Additional research is needed to further define the critical age of copper piping to be represented by LCR sampling.

### *Effect of Chlorine Treatment on Copper Corrosion*

A study by **Schuerman et al., (2000)** in Nebraska used a pipe-loop experiment to examine the impact of chlorine addition on new and aged (>20 years) copper pipes under different water quality conditions. Two water sources were used: the surface water source for the City of Lincoln, Nebraska, and ground water from the Crete-Princeton Aquifer in Nebraska.

In the City of Lincoln study, the monitoring phase of the pipe-loop experiment was carried out for 76 days. The City of Lincoln uses ozone and aeration for iron and manganese removal of their surface water supply. Each day, a new sample was collected and analyzed for several constituents. The researchers discovered that new pipes leached the highest concentration of copper. In particular, new pipes containing unchlorinated water tended to produce the highest concentration of copper in water samples, followed by new pipes with chlorinated water. The initial copper concentration in the new pipes with unchlorinated water was 2.2 mg/L and fluctuated between about 1.75 mg/L and 2.25 mg/L over the course of the study. The initial copper concentration for new pipes with chlorinated water was about the same level, but hovered closer to 1.5 mg/L over the duration of the study. Aged pipes with chlorinated water had slightly higher copper levels than aged pipes with unchlorinated water (about 1.0 mg/L compared to 0.8 mg/L, respectively). These levels remained fairly constant throughout the study. Manganese dioxide deposits found on the new chlorinated pipe may offer a protective benefit that would explain the lower copper concentrations associated with chlorinated versus unchlorinated new pipe. Water samples collected from new pipe appeared to have more variable copper levels than water samples collected from aged pipes based on graphical results provided by the author.

The new and aged pipes looked quite different under the electron microscope. The new chlorinated pipe showed thin, irregular scale with pitting. The pitting was attributed to the chlorine treatment since it was not observed on the unchlorinated new pipe. The unchlorinated new pipe also had a thin layer of scale, but it was more uniform than the new chlorinated pipe. Both aged pipes were similar with respect to the copper concentrations and the appearance of scale when analyzed via scanning electron microscope (SEM) and XRD, exhibiting thick, irregular scale with fine pitting. These pipe scale observations for the different treatments were consistent with the measured copper concentrations.

The Crete-Princeton aquifer water had a lower dissolved oxygen (DO) level, which is typical of ground water systems, and higher alkalinity than the City of Lincoln surface water (see Exhibit 5), although the higher DO level at the city of Lincoln was likely due to the use of ozone and aeration treatment. The highest initial copper levels (1.3 mg/L) were observed in the aged pipe with chlorinated water, followed by the aged pipe with unchlorinated water (1.0 mg/L). The

copper levels in the aged pipe with chlorinated water gradually decreased to 0.80 mg/L, and the aged pipe with unchlorinated water declined to 0.4 mg/L. The copper concentrations remained the lowest in the new pipe with unchlorinated water (0.25 mg/L) throughout the 109-day.

The copper levels in the new pipe with chlorinated water started out lower than both aged pipes (around 0.75 mg/L), but by about 25 days into the study, they exceeded the copper action level and fluctuated near the action level for the remainder of the experiment. The SEM pipe scale analysis had not been completed at the time the paper was published.

The authors came to the following conclusions:

- Free chlorine that is added to previously unchlorinated drinking water tends to increase dissolved copper concentrations.
- New and aged pipes may react differently to the addition of chlorine, especially with respect to the initial concentration of copper released.
- The authors noticed that the nature of scale on aged pipes tends to be related to the amount of dissolved copper in drinking water (i.e., pipe with thinner scale exhibited higher copper levels, while thicker scale exhibited lower copper levels).
- The authors estimate that greater than about 6 months are required for new and aged pipes to show similar stable copper concentrations, but indicated this would vary with water chemistry and scale composition
- Depending on water quality, new copper pipes can have very different corrosion rates, while aged pipes tend to have more stable copper concentrations.
- Current research which has been done primarily on new pipes, may not extrapolate to actual systems that contain combinations of aged and new pipes, and that water quality may have more impact on copper release than the age of pipe under certain circumstances.

**Exhibit 5. Water Quality Characteristics for the City of Lincoln and the Crete-Princeton Aquifer**

Parameter	City of Lincoln Water	Crete-Princeton Aquifer Water
pH	7.1	6.8
Total Alkalinity (as CaCO <sub>3</sub> )	160 mg/L	240 mg/L
Dissolved Oxygen	10 mg/L	<1.0 mg/L

## Summary of Second Six-Year Review Copper Data (1998-2005)

### *Six-Year Background Information*

Under the Safe Drinking Water Act, EPA must review each National Primary Drinking Water Regulation (NPDWR) at least once every six years and revise them, if appropriate. EPA reviews historical monitoring data, system information and compliance records to evaluate the effectiveness of a regulation and to identify revisions that would improve public health and/or a system's ability to comply. EPA completed its first Six-Year Review of 69 NPDWRs. Currently, EPA is analyzing occurrence data for the second Six-Year Review cycle of 2003 – 2009, which were submitted by States in response to EPA's voluntary data call-in for their drinking water compliance monitoring records. This section discusses copper data that were requested and received by EPA.

EPA requested compliance monitoring data that were collected by systems between January 1998 and December 2005 including sampling point identification code, sample collection date, sample purpose (e.g., compliance/routine), sample type (source or tap). EPA did not request water quality parameter data or corrosion control treatment information. Copper data were received from all States and U. S. Territories except Maryland, Florida, Tennessee, Kansas, New Hampshire, American Samoa, Washington, D.C., and Navajo Nation. This enabled development of a copper data set from 41 States consisting of approximately 815,862 individual copper sample results from 46,082 public water systems across the U.S and greatly expands the information available to EPA. Reporting of copper compliance monitoring data to EPA as required by the LCR is limited to 90<sup>th</sup> percentile levels over 1.3 mg/L for all systems. Some states may have reported additional 90<sup>th</sup> percentile copper values to SDWIS/Fed regardless of whether the copper action level was exceeded; however, EPA does not require this information to be reported unless a system has exceeded the action level.

Exhibit 6 below provides summary statistics for copper data received for the Second Six-Year Review. The first four columns indicate the number of States that submitted copper data, the total number of samples reported, the total number of systems for which copper data was reported and the populations served by these systems. The remaining columns display the number and percent of systems for which at least one reported sample analytical result exceeded the copper action level (1.3 mg/L) between January 1998 and December 2005 and the total and percent of the population served by these systems.

<b>Exhibit 6. Summary Statistics of Copper Occurrence in Finished Drinking Water Based on 1998-2005 Compliance Monitoring Data Submitted by States for the Second Six-Year Review</b>							
No. of States with Data	Total Number of Copper (Cu) Sample Results	Total Number of Systems	Total Population Served by Systems	Number of Systems with at Least 1 Sample Result Above Copper Action Level (AL)	Percent of Systems with at Least 1 Sample Result Above Copper AL	Total Population Served by Systems with at Least 1 Sample Result Above Copper AL	Percent of Population Served by Systems with at Least 1 Sample Result Above Copper AL
41	815,862	46,082	200,522,338	3,654	7.93%	21,418,703	10.68%

The data received by EPA's request are limited and have questionable value for evaluating revisions to the LCR. Only nine States provided tiering information on about 50 percent of tap sampling sites and the quality of these data were not reviewed. The limited water quality data cannot help to evaluate the sensitivity of selection of new copper sites vs. the LCR sites in terms of expected copper levels and different possibility of AL exceedence. The data lack adequate precision in characterizing the age distribution of the actual sites used by each system, and the distribution of copper levels in them. To address limitations in the data, the following section outlines suggestions for an additional data request.

### *Suggestions for Collecting Tiering, WQP, and Treatment Information*

As a first step, EPA could request that States voluntarily complete a brief questionnaire that would identify how tiering information, WQP, and treatment information is tracked. For States tracking this information electronically, the questionnaire could ask States whether this information could be easily extracted from the State's data base system. To minimize the burden on States, EPA could follow-up with an information collection request (ICR) to only those States that maintain these data electronically.

Water quality parameter (WQP) and corrosion control or source water treatment information and complete tiering information would be helpful to conduct trend analysis related to lead levels and plumbing source contributions and would allow EPA to understand how corrosion control is being operated in States.

Those States that use State Safe Drinking Water Information System (SDWIS/State) can enter tiering information for each tap sample site (i.e., the drop-down menu provides a code that corresponds to each of the criteria for the various tiers. For example, the code "LSL SFR" indicates that the lead and copper sample was collected from a single family residence (SFR) that was served by a lead service line (LSL). Thus, if this information were populated, it would be possible to determine the tiering level for each lead and copper sample.

Another approach is to expand the scope of the data verifications to allow the gathering of these data. This effort could be done in concert with the ICR and focus only on those States that do not maintain these data electronically; or alternatively, include all States in place of an ICR. To collect tiering information, reviewers may need to review the original materials evaluation surveys submitted in 1992 and 1993 in addition to the updated surveys and sample results. This effort would need to be conducted in consultation with State staff because the sampling points do not remain constant during each sampling event due to lack of homeowner participation and changes in the tier status of a site. Because States are required by federal regulation to retain LCR data for only 12 years, it is unknown if the original surveys are available in every State for review, and whether States consistently track this information from one sampling event to another. To collect treatment information, reviewers may need access to sanitary surveys, detailed treatment plant schematics, monthly operating reports, and/or corrosion control treatment recommendations and studies. Although this approach is less burdensome on the State, its cons include: possible limited access to needed materials, collection effort is expensive

and time-consuming to collect needed data, and PWSS reviews are conducted on a three-year cycle.

## Conclusions

The studies discussed in this paper support the reevaluation of EPA LCR copper tiering; and, in particular, the LCR tiering criteria that focuses on pipes that are over 20 years old. The studies presented here focused on pipe age, stagnation behavior of copper, the issue of lead and copper corrosion from interior brass fittings, and the effects of chlorine and orthophosphate treatment.

The literature review indicates that newer, rather than older pipes are more prone to copper release (Kimbrough, 2001, 2007; Schuerman et al., 2001; Turek et al., 2006; Lagos et al., 2001; Schock et al., 1995; Kirmeyer et al., 2005; and Rajaratnam et al., 2002), although this may be dependent on water quality and treatment conditions (Schuerman et al 2001). Some of the studies have proposed a near linear decrease in copper concentrations in plumbing water samples with age of pipe (Lagos et al., 2001; Schock, Lytle, and Clement, 1995). Similarly, Turek et al. (2006) predicted through modeling that the copper levels in second-draw samples decreased an average of 0.050 mg/L per year. The specific rate of decrease can depend on many factors including water composition, temperature, corrosion control treatments, presence and alloy composition of brass fixtures, stagnation time, level of water usage, and flow rate.

Studies reported different pipe ages that exhibited the highest copper release. At the Indian Hill Waterworks in Ohio (Schock and Sandvig, 2006), copper levels stabilized after 2 or 3 weeks in a pilot-scale system. Schuerman, Miller, and Dvorak (2000) concluded that about 6 months are required for copper concentrations to stabilize in new pipes to similar levels as aged pipes, while Turek et al. (2006) observed that pipes over 5 years old showed complete scale coverage, which can serve as a protective layer, inhibiting copper corrosion.

Stagnation time effects on copper release are more complex than stagnation time effects on lead release. Copper levels can continue to increase beyond the current LCR standing time requirement of >6 hours, with maximum equilibrium values measured at stagnation times of 24 hours or longer (Schock and Gardels 1983; Schock et al 1996; Merkel et al 2002; Merkel and Pehkonen 2006; Lehtola et al 2007). However the copper concentrations measured in water after stagnation will depend on the oxidant level in the water.

Brass corrosion is also a complex issue. Studies indicate that interior brass plumbing fixtures may contribute a significant proportion of the metal content in LCR samples (Kimbrough, 2001, 2007, and 2009; Rajaratnam, Winder, and An, 2002; Lytle and Schock, 1997). The literature made a distinction between different types of brasses, specifically yellow and red. Lytle and Schock (1997) found that the composition of brass dictated the types of corrosion that occurred: yellow brass tended to release more zinc because of its higher proportion of zinc, while red brass contains more copper and tends to leach more copper. In general, red brass is most prone to copper release – with levels of copper that can equal the copper release from pure copper pipe in some instances. Yellow brass will also destabilize the copper and other metals that remain (Kimbrough, 2001). In addition, there is some evidence that the age of brass materials may impact the amount of copper released, with newer brass subject to dezincification releasing less

copper, and older brass releasing more copper (Kimbrough, 2009). If brass is in fact a major contributor to lead and copper in LCR samples, EPA may want to revise its sampling protocol.

The literature also supported the idea that chlorine treatment promotes copper release (Schuerman, Miller, and Dvorak, 2000; Schock, Lytle, and Clement, 1995,). Schock and Lytle (2005) explained that chlorine and chloramines are oxidizing agents and increase the ratio of the more soluble copper (II) to the less soluble copper (I) species. Systems should monitor their copper levels carefully whenever oxidizing species increase, whether through treatment (chlorine, chloramines) or by other changes that increase dissolved oxygen. Therefore, identifying tiering criteria for copper pipe based on age of pipe alone may not be appropriate for all water qualities scenarios

The published information on orthophosphate for corrosion control is somewhat more complex, but shows agreement on several issues. Many systems use orthophosphate for lead and/or iron corrosion control. Several sources agree that orthophosphate treatment can also help reduce copper levels below the action level; however, at a pH above 6.5, aged copper pipe that is not exposed to orthophosphate may have drinking water with lower copper levels (Schock, Lytle and Clement 1995). The time period to achieve these low copper levels is unknown and new sources of copper are constantly being added to water systems (Edwards et al., 2001; Schock and Sandvig, 2006; Schock, Lytle, and Clement, 1995). Edwards et al. (2001) concluded that cupric phosphate, a product of orthophosphate combining with copper on pipe surfaces may prevent the formation of relatively insoluble forms of copper which have the potential to even further decrease the amount of dissolved copper in drinking water. If orthophosphate treatment is used, lower dosage rates may be applied at a higher pH.

The issue of revisions to sampling protocol are discussed in a separate issue paper. The authors of the studies cited in this issue paper made several other recommendations that EPA may wish to consider when deciding whether to and how to reevaluate the copper tiering strategy. For example, the cupric hydroxide copper solubility model, which is a recommended guide for selecting corrosion control treatment strategies (Schock and Sandvig, 2006; Turek et al., 2006; Schock et al., 1995), could be used by EPA to determine a sampling site's potential for high copper levels. Models may be accurate, cost-effective, and timely methods of tailoring treatment to the exact conditions at a system, and may be effective when used in place of pilot systems and laboratory experiments. Kimbrough (2001) specifically recommended that EPA study the contribution of brass corrosion to lead and copper levels, and that the Agency consider more stringent standards for interior brass plumbing fixtures. Kimbrough (2009) also suggested that the age of the brass plumbing might be a factor in the amount of copper released. The highest risk factors for high copper levels in tap samples were thought to be new construction and remodeled homes, systems with unstable pH, and dead end areas in the water distribution system (Schock et al., 1995). The literature documents several reasons why EPA should consider revising sampling guidelines and copper tiering for the LCR.

Based on this literature review, it is recommended that EPA consider adopting separate requirements for selection of copper sampling sites that represent the highest risk factors including newer homes that use copper plumbing. In addition, the Agency may want to consider sampling strategy options that factor in the influence of stagnation time on copper release and the influence of brass fixtures on LCR sampling.



With respect to the influence of stagnation time on copper release, the information presented above indicates that copper levels may not reach maximum levels under the stagnation requirements of the current LCR (minimum of 6 hours). Stagnation behavior of copper, as well as the age of copper piping and the quality of water the copper sources are exposed to, are all factors that will determine at which sites the highest copper levels are likely to be measured. The current LCR identifies the number of samples to be collected based on striking a balance between requiring enough samples to capture the variability in lead levels (not copper levels) that can occur within a water system and among individual taps, and placing undue burden on residents, analytical laboratories and water systems (USEPA 1991). Since copper release behavior is different than lead release behavior under stagnation conditions, EPA should consider evaluating the variability of copper levels measured under stagnation conditions to identify the number of samples that should be taken to assess copper level compliance with the LCR. A possible outcome of this evaluation might be that a different number of sample sites for copper might be appropriate. Also, if copper is less variable, and a statistically significant correlation could be developed between equilibrium maximum copper levels and copper levels that would be measured after various stagnation times, then a sampling strategy for copper that incorporates a shorter stagnation time might also be appropriate.

With respect to the influence of brass fixtures on LCR sampling, brass fixtures can contribute a significant proportion of the metal content in LCR samples. The contribution is dependent on the type and age of the brass alloy used in the faucet, with newer faucets generally contributing more lead and copper to one-liter compliance samples. However, the impact of dezincification of brass, where older brass plumbing may release more copper than newer brass plumbing may be a confounding factor in this relationship. Current LCR tiering and sampling strategies do not take into account these contributions, whether in older homes that have been retrofitted with newer brass faucets, or in newer homes with newer brass faucets.

Further, orthophosphate treatment may not be an effective treatment solution for copper corrosion at all water systems. Although applying corrosion control chemicals can be an immediate and effective way to lower copper levels, EPA should consider that over time, copper pipe aging without orthophosphate treatment may produce lower copper levels than orthophosphate treatment can achieve. The unique characteristics of individual water systems, with respect to the amount of newer versus older copper materials in place, need to be incorporated into the evaluation of the most appropriate water quality and treatment scenarios for reduction of copper levels. The potential for new home construction and renovations which could potentially introduce new copper plumbing into the system may result in exposure to high copper levels in systems without corrosion control in place. However, the introduction of newer brass plumbing may or may not follow the same relationship, since newer brass may release less copper than older brass plumbing.

Data collected to support the Six-Year Review process did not provide sufficient information on the location of tap sample sites or the Tier level of the samples sites. In addition, EPA did not request or receive water quality parameter information or corrosion control and source water treatment information from States. Because of the limitations in the data collected, information from the Six-Year Review cannot be used to help determine whether the current tiering process for copper is appropriate.

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# Lead and Copper Rule

## Stakeholder Meeting on Long-term Revision Issues



Office of Ground Water & Drinking Water,  
USEPA

November 4, 2010, Philadelphia PA



# LCR: A Quick Overview

Eric Burneson, Acting Deputy Director,

Office of Ground Water and Drinking

Water. November 4, 2010



# Lead and Copper Rule (LCR)

- National Primary Drinking Water Regulation (NPDWR) promulgated **June 7, 1991**
  - Addresses corrosion of lead and copper in drinking water
    - primarily from service lines and household plumbing
  - Maximum Contaminant Level Goals (MCLG)
    - Lead – 0 µg/L
    - Copper – 1.3 mg/L
  - Requires a treatment technique (optimized corrosion control) rather than a Maximum Contaminant Level (MCL)
- Tap sampling results are compared to an action level
  - Lead - 15 µg/L
  - Copper - 1.3 mg/L
- Action level for lead is a screen for optimal corrosion control as part of the treatment technique. It is based on treatment feasibility; NOT on a health threshold (applies to systems serving < 50,000 people)



# Actions Triggered Under Action Level Exceedance

- If the 90<sup>th</sup> percentile of a system's lead sampling results exceed the action level, a system must:
  - Optimize corrosion control (for systems < 50,000 people)
    - Identify and install optimal corrosion control treatment
    - Comply with State-specified optimal water quality parameters
  - Public Education
    - Mandatory language for pamphlets and brochures on lead
    - Deliver materials to all bill-paying customers
    - Deliver materials to organizations that serve sensitive subpopulations (e.g., schools, pediatricians)
- Lead Service Line Replacement
  - replace the portion of the lead service lines system owns
  - offer to replace the customer's portion of service line at cost
  - lines where samples are below action level are also considered replaced
  - replace 7% of the lead service lines each year



# LCR in Process: 2004 National Review

- Review of Data
- Review of Implementation
- Expert Workshops
  - Simultaneous Compliance
  - LCR Monitoring Protocols
- Public Education
- Lead Service Line Replacement
- Lead in Schools and Childcare Facilities



# 2005 Drinking Water Lead Reduction Plan

- ☑ Expert Workshop on Plumbing Fittings and Fixtures (July, 2005)
- ☑ Update guidance on Lead in Drinking Water in Schools and Non-Residential Buildings (3 T's Toolkit), Jan, 2006)
- ☑ Update 1999 guidance on Simultaneous Compliance (May, 2007)
- ☑ Targeted Revisions to the Lead and Copper Rule (October, 2007)



# Other “Long Term” Actions Taken

- 2006 NDWAC Recommendations for proposed changes to regulatory requirements for public education.
  - Incorporated into the October, 2008 revisions to the Lead and Copper Rule
- 2007 Revisions to NSF/ANSI Standard 61



# Draft Discussion White Papers

- Prepared to provide a baseline of information for discussion of some of the key issues identified for discussion.
- **DRAFT**
  - not intended for wider distribution
- Do not represent Agency policy or decisions; intended as an initial introduction to the topics



# Lead and Copper Rule: Long-Term Revisions

## A Presentation of Possible Revisions to the Tiering Criteria

Matt Robinson: Office of Ground Water and Drinking Water

November 4, 2010



# Goals

- . Provide information on long-term LCR issues under consideration for revision
- . Receive/discuss feedback on revising lead and copper site selection criteria



# Tiering Classification for CWSs

<b>CWSs – Current Criteria</b>	<b>CWSs – Possible Revised Criteria</b>
<p><b>Tier 1</b> sampling sites are single family residences (SFRs):</p> <ul style="list-style-type: none"> <li>• <b>with copper pipes with lead solder installed after 1982 (<i>but before the effective date of the State’s lead ban</i>) or</b> contain lead pipes; and/or</li> <li>• that are served by a lead service line.</li> </ul> <p><b>Note:</b> Multiple-family residences (MFRs) may count as Tier 1 sites when they comprise at least 20% of the structures served by the water system.</p>	<p><b>Tier 1</b> sampling sites are single family residences (SFRs) that contain lead pipes and/or are served by a full or partial lead service line.</p> <p><b>Note:</b> Multiple-family residences (MFRs) may count as Tier 1 sites when they comprise at least 20% of the structures served by the water system.</p>
<p><b>Tier 2</b> sampling sites consist of buildings, including MFRs:</p> <ul style="list-style-type: none"> <li>• with copper pipes with lead solder <b>installed after 1982 (<i>but before effective date of the State’s lead ban</i>) or contain lead pipes;</b> and/or</li> <li>• that are served by a lead service line.</li> </ul> <p><b>Tier 3</b> sampling sites are SFRs with copper pipes having lead solder <b>installed before 1983.</b></p>	<p><b>Tier 2</b> Sampling sites consist of MFRs that are served by a lead service line in which a portion of the line has been replaced with a non-lead service line (i.e., the water system has conducted partial lead service line replacement as described in § 141.84(d).</p> <p><b>Tier 3</b> sampling sites are SFRs and/or MFRs with copper pipes with lead solder.</p>



# Possible Changes for Lead

- Remove date requirements
- Update tiering to reflect current variety of lead sources



# Possible Modified Tiering Classification for CWSs

## CWSs – Current Criteria

**Tier 1** sampling sites are single family residences (SFRs):

- with copper pipes with lead solder installed after 1982 (*but before the effective date of the State's lead ban*) or contain lead pipes; and/or
- that are served by a lead service line.

**Note:** Multiple-family residences (MFRs) may count as Tier 1 sites when they comprise at least 20% of the structures served by the water system.

**Tier 2** sampling sites consist of buildings, including MFRs:

- with copper pipes with lead solder installed after 1982 (*but before effective date of the State's lead ban*) or contain lead pipes; and/or
- that are served by a lead service line.

**Tier 3** sampling sites are SFRs with copper pipes having lead solder installed before 1983.

## CWSs – Possible Revised Criteria

**Tier 1** sampling sites are single family residences (SFRs) that contain lead pipes and/or are served by a full or partial lead service line.

**Note:** Multiple-family residences (MFRs) may count as Tier 1 sites when they comprise at least 20% of the structures served by the water system.

**Tier 2** Sampling sites consist of MFRs that are served by a lead service line in which a portion of the line has been replaced with a non-lead service line (i.e., the water system has conducted partial lead service line replacement as described in § 141.84(d)).

**Tier 3** sampling sites are SFRs and/or MFRs with copper pipes with lead solder.



# Possible Modified Tiering Classification for NTNCWSs

<i>Current Criteria</i>	<i>Possible Revised Criteria</i>
<p><u>Tier 1</u> sampling sites consist of buildings:</p> <ul style="list-style-type: none"> <li>• with copper pipes with lead solder installed after 1982 (<i>but before the effective date of the State's lead ban</i>) or contain lead pipes; and/or</li> <li>• that are served by a lead service line.</li> </ul>	<p><u>Tier 1</u> sampling sites consist of buildings that contain lead pipes and/or are served by a lead service line.</p>
<p><u>Tier 2</u> sampling sites consist of buildings with copper pipes with lead solder installed before 1983.</p>	<p><u>Tier 2</u> sampling sites consist of buildings that are served by a lead service line in which a portion of the line has been replaced with a non-leaded service line (i.e., the water system has conducted partial lead service line replacement as described in §141.84(d).</p>
<p><u>Tier 3:</u> Not applicable.</p>	<p><u>Tier 3</u> sampling sites are buildings with copper pipes with lead solder.</p>



# Possible Changes for Copper

- Maintain lead and copper site selection criteria, but include additional sampling for new copper installations
  - Public education component, regular monitoring until passivation
- Separate site selection criteria for copper
  - Form tiering criteria for copper which reflects the behavior of copper in newer plumbing



# Key Questions and Considerations

- Will changes to the sample site selection criteria necessitate an updated materials survey?
- What will be the burden to systems?
- Are tiering revisions likely to decrease exposure? Simplify, or at least not further complicate implementation?



# Comments and Feedback?



# Lead Service Line Replacement

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OGWDW

November 4, 2010 Stakeholder Meeting  
Philadelphia, PA



# LCR Requirements

## Lead Service Line Replacement

- Systems affected – systems exceeding the lead action level (AL) after installation of corrosion control treatment (CCT) are in the lead service line replacement program (LSLRP)
- Duration – 15 years or until system meets lead AL in two consecutive 6-month monitoring periods
- What is considered “replaced”?
  - Sites where lead levels from all service line samples are at or below 15 ppb
  - Physical replacement of at least the portion under the system’s control (control = ownership in 2000 LCR Minor Revisions Rule)
  - Full replacement where home owner pays for removal of the portion of the line that they own



# 1991 LCR

## Definition of “Control”

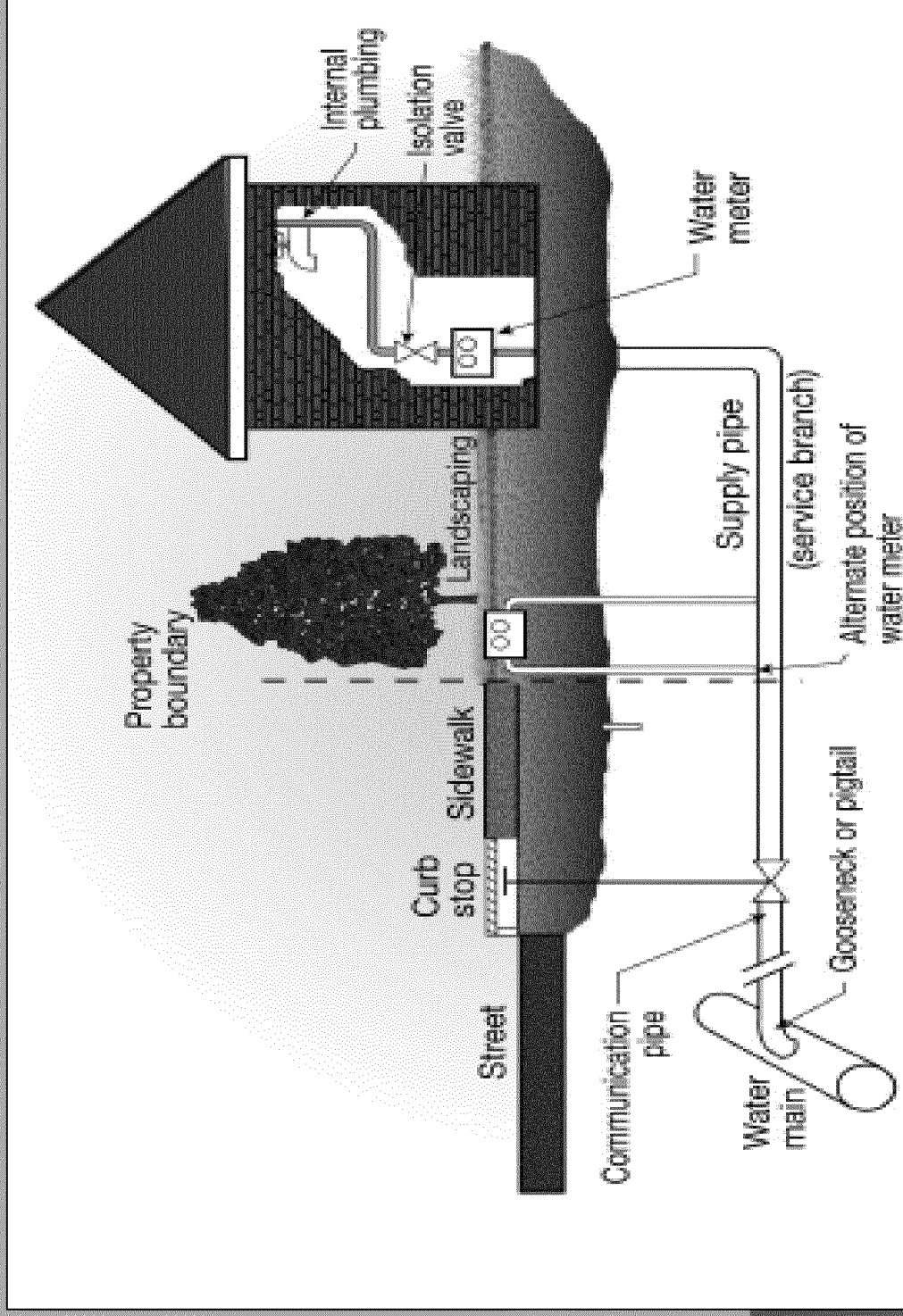
- Water system was required to replace the entire service line unless it could demonstrate that it controls less than the entire service line
- “Control” included:
  - Authority to set standards for construction, repair, or maintenance of the line
  - Authority to replace, repair, or maintain the service line
  - Ownership of the line
- Provision was remanded by Court
  - Basis – Notice and Comment
  - Court did not rule on legality of the definition of control



# LCR Requirements: Partial Lead Service Line Replacement

- Notify residents at least 45 days prior to partial replacement
  - Provide information on possibility of elevated short-term lead levels
  - Measures to minimize exposure
- After partial LSL replacement at a site
  - Collect sample representative of water in the partially-replaced LSL within 72 hours after replacement
  - Report results to owner and residents within 3 business days
- Sample is not intended to assess the effectiveness of the partial LSL replacement
  - Intended to reinforce pre-replacement notification
  - Sample would most likely come from remaining lead portion of line
  - Can be long gap between sample collection and receipt of results





**60-67 ft total (utility 20-27 ft.) (Weston and EES 1990)**

**55 ft total (utility 25 ft.) (older areas)**

**68 ft total (utility 27 ft.) (newer areas) (AwwaRF 2008)**

# Partial Lead Service Line Replacement Studies

- Limitations
  - Many studies are voluntary replacements - not directly comparable to LCR
    - System meets lead AL
    - Many of the sites may meet AL
    - Lead levels likely to be lower at sites, which may limit reductions
- Sampling Protocols
  - Many use first draw samples
  - Very few use long-term profile sampling to fully examine impact of partial LSL on lead levels



# PLSL Studies for 2001 LCR Minor

## Revisions Rule

### ➤ Case Studies

- Glasgow, Scotland – one site
  - First Draw and Random Daytime Draw samples
  - Very long service line – 10 meters replaced from 36 meter line
  - Lead levels >> Lead AL

Samples taken over 2-week period before replacement and one week, two months and four months after partial replacement

Average concentration at four months is 25% lower than before replacement

Lead levels still > AL



# PLSL Studies for 2001 LCR Minor

## Revisions Rule

### ➤ Case Studies

- Newport News – 1987 – nine sites
  - Samples collected at meter
  - Study predates LCR
  - Some sites  $> AL$ , others  $< AL$
  - Samples taken – before replacement, just after replacement and two weeks after replacement
  - Lead levels at all sites two weeks after replacement  $\leq$  before replacement



# PLSL Studies for 2001 LCR Minor

## Revisions Rule

### ➤ Case Studies

- Oakwood, OH – four sites
  - Multiple service line samples – 250 mL
  - Lead levels at sites < AL
  - Samples taken before replacement and over a 2-week period apprx. 6 weeks after replacement
- Lead levels at 3 of 4 sites were below the before replacement levels by second week of sampling
- Fourth site only tested once at beginning of sampling period – slightly higher lead 8 ppb vs. 6 ppb



# Recent PLSL Studies

- GCWW (Swertfeger et al, 2006)
  - 21 Sites – 5 no replacement, 5 PLSL, 6 PLSL w/Teflon sleeve, 5 full replacement
  - First draw (FD), 3-min flush, 10-min flush samples of 750 mL
  - Most before replacement samples > lead AL; pH adjusted from 8.5 to 8.8 prior to post-replacement sampling
  - Samples taken before replacement, week after replacement and monthly for a year
- FD lead levels below pre-replacement levels within one month
- Similar trend in 3-min flush samples taken at PLSL site in Figure 2 of article
- Steady state average FD lead data: No replacement > PLSLR > PLSLR w/sleeve > FLSLR
- FD lead levels at no replacement sites lower after pH adjusted from 8.5 to 8.8



# Recent PLSL Studies

- AwwaRF 2008
  - Two sites – different utilities
  - First draw and profile sampling – sequential samples
  - One site  $> AL$ , one site  $< AL$  before replacement
  - Samples taken before, 1, 2, and 3 days after replacement and 1 and 2 months after replacement
  - Table 3.10 shows
    - Site  $> AL$ , 1<sup>st</sup> liter lead 2 months after replacement  $>$  before replacement, but still below  $AL$
    - Site  $< AL$ , 1<sup>st</sup> liter lead 2 months after replacement  $<$  before replacement, but still above  $AL$
    - Both sites, total lead based on all samples from profile showed a small reduction in total lead after two months



# Recent PLSL Studies

- Guelph, Ontario, Canada (Muytwyk et al, 2009)
  - 2 sites
  - Profile sampling - 8 sequential 1-liter samples after 30-min stagnation
  - Sites > AL, no corrosion control at utility
  - Samples taken before replacement and after replacement at:
    - 1, 2, and 3 days
    - 1, 2, 3, 4 weeks
    - 2 and 3 month
  - Quarterly up to one year
  - Site 3
    - Spikes above before replacement levels up to week 4
    - Small reduction in maximum of first two liters after 1 year
  - Site 5
    - All samples below before replacement levels
    - Very large reduction in maximum of first two liters after 1 year



# Recent PLSL Studies

- DC WASA (HDR Study – 2009)
  - Four sites have both pre and post-replacement samples from PLSL sites – all have some galvanized interior plumbing
  - Profile sampling
  - Samples taken before replacement and
    - 1 day after replacement
    - 2, 4, and 8 weeks after replacement
  - Results
    - G1: Some Pre-LSL samples  $> AL$ ; 8 weeks results all  $< AL$  and  $PLSL < Pre-LSL$
    - G2 : All in-house & service line Pre-LSL samples  $> AL$ ; 8 weeks results  $PLSL > Pre-LSL$  in lead portion &  $PLSL < Pre-LSL$  in new copper portion
    - G3: Site  $< AL$ ; 8 weeks results all  $< AL$ ; and  $PLSL < Pre-LSL$
    - M1: Some Pre-LSL  $> AL$ ; 8 weeks results all  $< AL$ ; and  $PLSL < Pre-LSL$



# Centers for Disease Control

## Statements on Partial LSLR

- September 4, 2009 Letter to DC WASA
  - Examined blood lead level (BLL) data from 1999 – 2006
  - Risk of elevated BLLs > 10 ug/dL at partial LSL replacement sites is four times higher than sites **without a LSL**
  - Risk assessors perspective
  - Risk managers perspective not addressed – how partial LSLs compare to undisturbed LSLs
- January 12, 2010 Letter to Lead Program Managers
  - Preliminary results suggest that children at PLSLR sites are more likely to have elevated BLLs than children at sites with undisturbed LSLs or sites without LSLs
- June 25, 2010 Morbidity and Mortality Weekly Report (MMWR)
  - Preliminary results suggest that partial LSL replacement does not decrease and might increase BLLs



# Risk Management Challenges

- There are no water lead data for sites
- Blood lead sample timing
  - Partial LSL replacement occurred AFTER the spike in lead levels following treatment changes in November 2000 – few LSL replaced before 2004
  - Depending upon the age of the child when tested, there could be considerable exposure to elevated lead levels while line was undisturbed prior to partial LSL replacement
  - May be hard to distinguish if elevated BLLs are from chloramines w/o orthophosphate period or partial LSL replacement or both
- Multiple treatment regimes in the 1999 – 2006 timeframe: high free chlorine, chloramines, chloramines plus orthophosphate transition, chloramines plus orthophosphate



# PLSLR Data Summary

- Water Lead Data
  - Most from voluntary programs
  - Limited profile sampling
  - Some sites > Lead AL
  - Case studies generally show sites at or below pre-replacement lead levels within 8 weeks or less
- Blood Lead Data
  - Unknown at this time
  - Have to resolve the risk management challenges



# PLSL versus Undisturbed LSLs

- One of the concerns with partial LSL replacement is that consumers may be exposed to spikes of elevated lead levels for some duration
- Could this also happen in undisturbed lead service lines, even when corrosion control has been optimized and levels are below the action level?
- What are the implications in systems where corrosion control treatment has not brought the system under the lead action level?
  - Systems required to conduct a lead service line replacement program under the current LCR



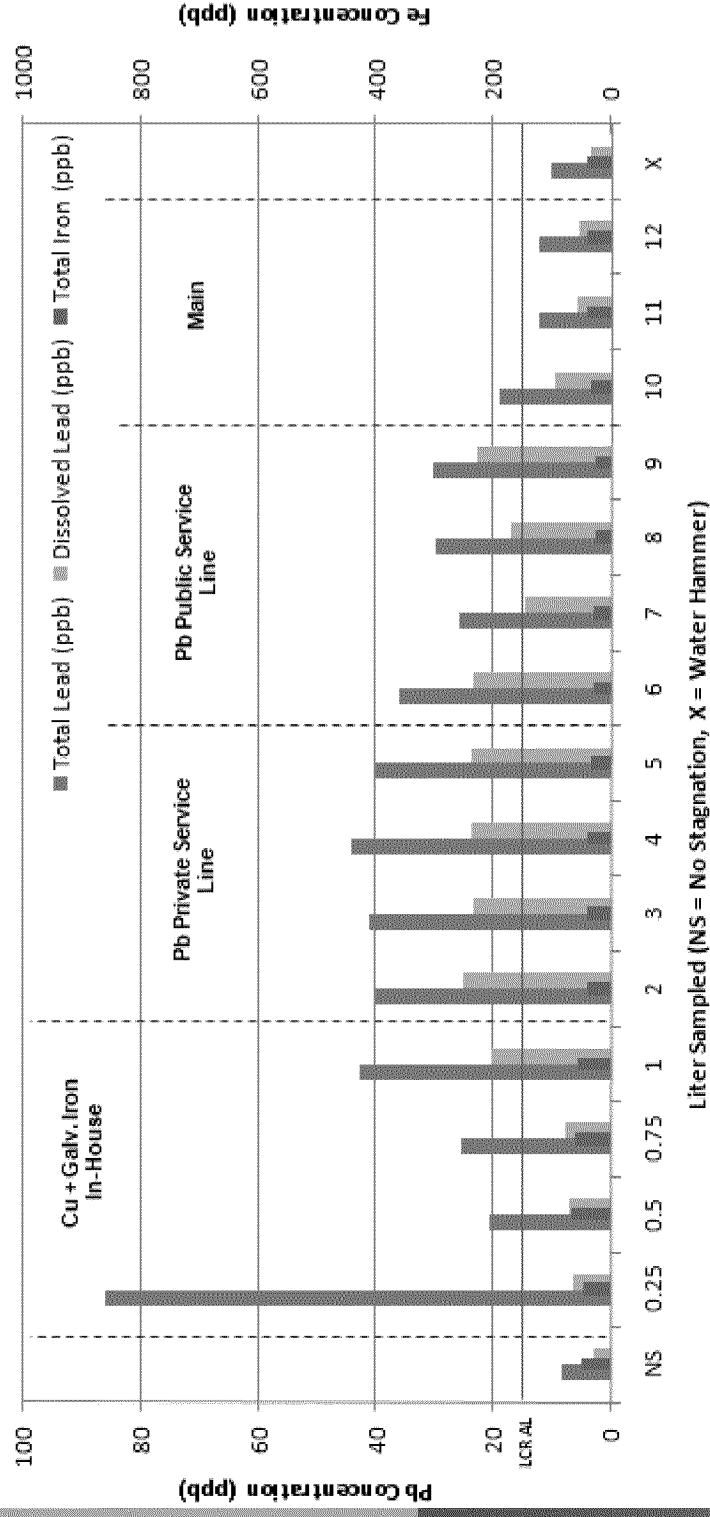
# Lead Released from Galvanized Piping – Washington, DC

- Study Conducted by HDR Engineering
- Focused on sites with lead service lines and internal galvanized plumbing because of recurring instances of elevated concentrations of lead and iron in tap monitoring
- Key Conclusions:
  - Galvanized iron plumbing can serve as a sink/source for lead
  - Lead-rich corrosion scale on galvanized plumbing (rust) can be a lead source in drinking water after initial sources have been removed (LSL, even after full LSLR)
- Key Recommendation:
  - Full replacement of LSL and interior galvanized plumbing is the most desirable option
  - Use of certified filters to remove lead at the tap is also an acceptable alternative

# Site G2 – HDR Study

## Orthophosphate Optimization

G2: Pre-LSR, Profile 7/18/2007

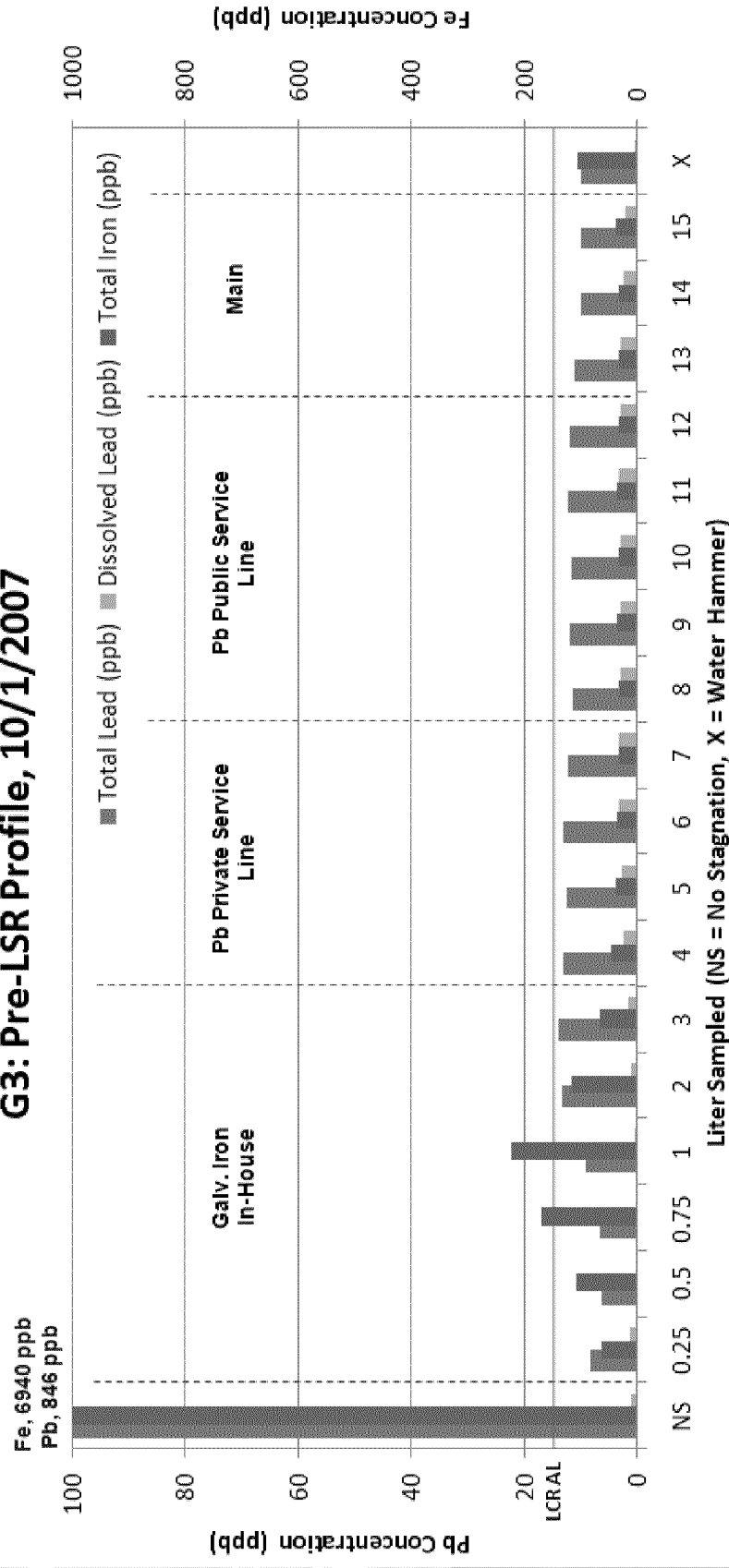




# Site G3 – HDR Study

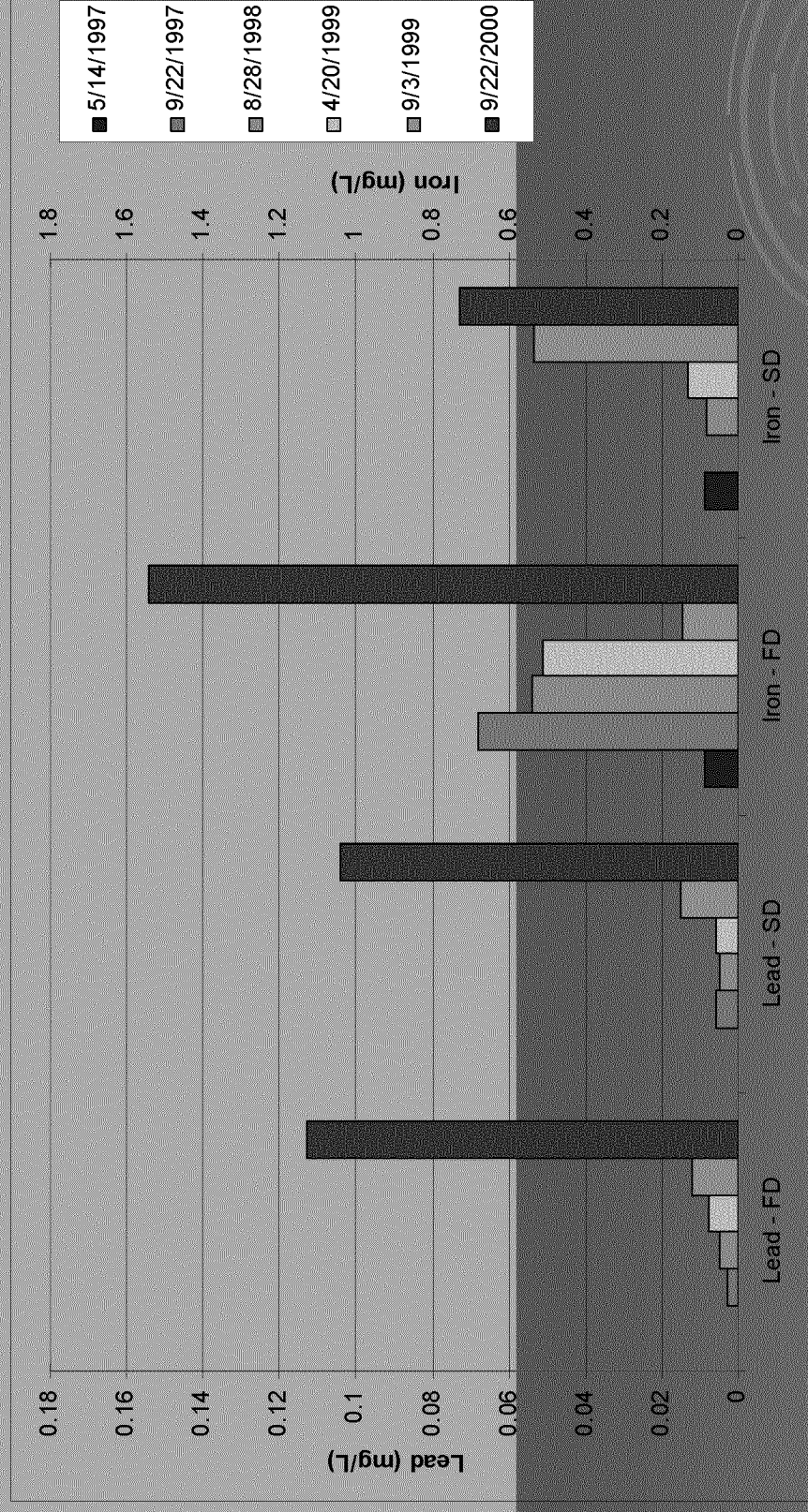
## Orthophosphate Optimization

**G3: Pre-LSR Profile, 10/1/2007**





# Site 52 – LCR Tap Results Pb(IV) Optimization





# Lead Spikes at Sites with Undisturbed LSLs

- Sites G2, G3, and 52
  - Lead spikes or elevated levels can be observed at undisturbed LSLs even with optimal corrosion control – OPO4 & Pb(IV)
  - LSLs are source for lead-rich corrosion scale in old galvanized plumbing
- GCWW Data
  - pH 8.5 for initial sample collection (later adjusted to 8.8)
  - 16 of the 21 sites had first draw lead above the AL with high of 58 ppb
  - Even after pH adjustment to 8.8, first draw samples from one of the five undisturbed LSLs was often above the AL with a high over 30 ppb
- Systems above the action level (FD) are likely to have more LSL sites where such spikes could occur and the magnitude of the spikes could be higher



# Partial Lead Service Line Replacement Issues

- Possible Actions for Current Mandatory LSLR:
  - Retain existing language on partial LSL replacement
  - Retain existing language on partial LSL replacement and collect profile sampling data where mandatory partial LSL replacement is occurring
  - Eliminate partial LSL replacement
  - Require full LSL replacement
    - revise definition of “control” – currently equals ownership
    - procedural remand of definition in 1991 rule
  - Provide alternative action when action level is exceeded:
    - Lining of lead service lines (currently collecting data on effectiveness and possible ORD Infrastructure STAR grant)
    - Point-of-Use treatment devices



# Partial Lead Service Line Replacement Issues

- Voluntary partial LSL replacement
  - Not covered by the rule at all
  - Existing data do show short-term increases, so an action level exceedance would be a possibility
  - Should there be notification and sampling requirements for these instances?
  - Would such requirements be legal under the Safe Drinking Water Act?
    - How would these requirements be imposed and enforced when the systems are in compliance with the rule?



# Comments and Feedback?



# National Primary Drinking Water Regulations for Lead and Copper: Long-Term Revisions

A presentation on options for lead  
testing in drinking water in schools  
and child care facilities

Francine St. Denis Ph.D.: EPA's Office of Ground Water and  
Drinking Water  
November 4, 2010



# Regulatory Authority for Controlling Lead Levels in Drinking Water

- THE LEAD BAN (1986): A requirement that only lead-free materials be used in new plumbing and in plumbing repairs.
- THE LEAD CONTAMINATION CONTROL ACT (LCCA) (1988): The LCCA further amended the SDWA. The LCCA is aimed at the identification and reduction of lead in drinking water at schools and child care facilities. *However, implementation and enforcement of the LCCA has been at each state's discretion. School monitoring and compliance has varied widely.*
  - **There is NO federal law requiring schools or child care centers to test drinking water for lead**
- THE LEAD AND COPPER RULE (1991): A regulation by EPA to minimize the corrosivity and amount of lead and copper in water supplied by public water systems.



# Lead in Schools and Child Care Facilities

## Drinking Water Background

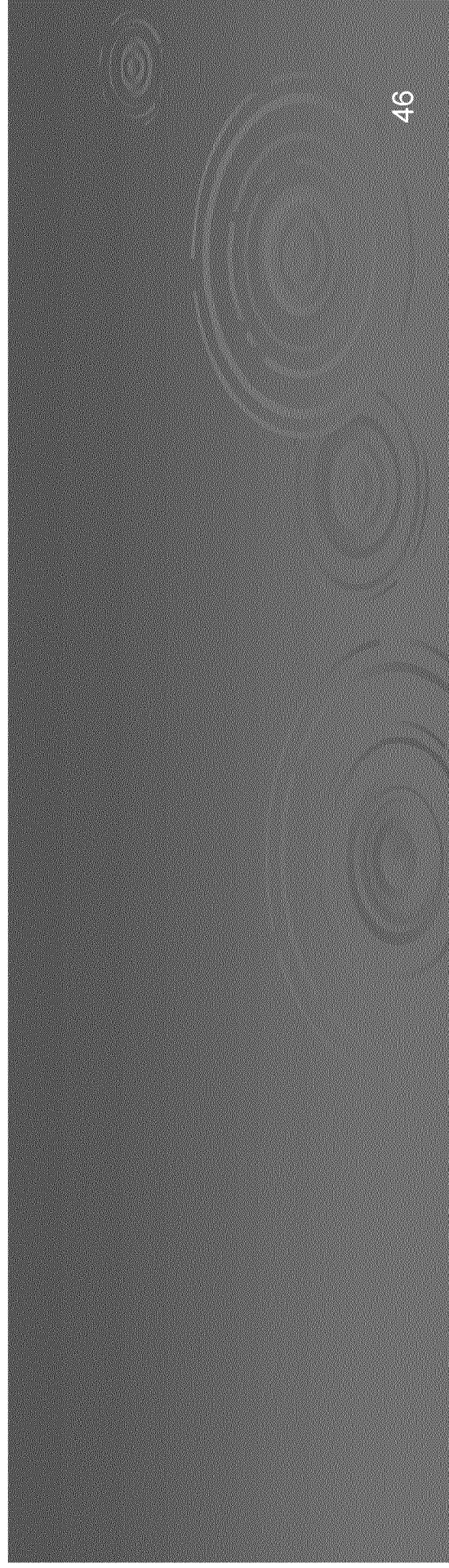
- All schools were subject to the 1988 Lead Contamination Control Act
  - Required removal of lead-lined water coolers in schools
  - Required EPA to develop guidance and a testing protocol
  - Created voluntary school monitoring program
  - Required schools which monitor to make their results publicly available
- On December 7, 2004, the EPA convened a meeting on the topic of Lead in Drinking Water in Schools and Child Care Facilities.
- EPA developed a lead action plan which included a commitment to undertake efforts to reduce lead in drinking water in schools and child care facilities.



[Speaker Notes For Slide: 45]

Because children are the most vulnerable, EPA wanted to understand activities to reduce exposure to lead in schools

On December 7, 2004, the EPA convened a meeting on the topic of Lead in Drinking Water in Schools and Child Care Centers. The purpose was to exchange information and discuss options with national experts in drinking water and children's health and education. The meeting was co-hosted by the Department of Education.



# Lead in Schools and Child Care Facilities

## Drinking Water Background Continued

- EPA requested information from states on the following:
  - Existence of programs to monitor for lead in schools and child care facilities; and,
  - How EPA could support voluntary efforts to monitor.
  - A summary of responses is posted on EPA website
- States largely focus on schools that have their own water supply and are thus regulated under the Lead and Copper Rule.
  - Some states have programs that look beyond public water systems

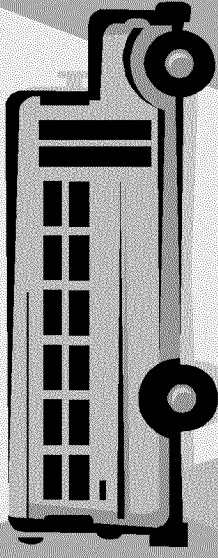


[Speaker Notes For Slide: 47]

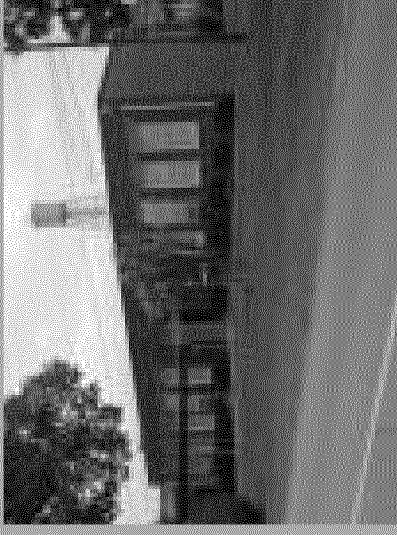
States took actions to meet the Lead Contamination Control Act in the late 1980's/early 1990's, but may not have focused considerable attention on schools since then. Many expressed interest in a program, but noted that they would need financial assistance to do so.

Other districts besides DC where testing identified elevated levels  
Montgomery County, MD  
Prince Georges County, MD  
Seattle, WA  
Boston, MA

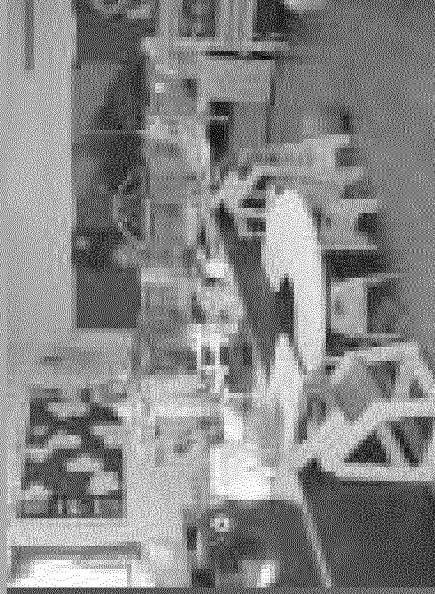
# Universe of Schools & Child Care Facilities



**~90,000 public schools  
receive water from a public  
water supplier**



**~7,677 schools/child care  
centers that are regulated as  
a public water supplier**



**~325,000 licensed child care facilities**



# EPA's Lead Action Level for Schools and Child Care Facilities

- Public Water System Testing = 15 ppb action level
  - Under the LCR for public water systems, a lead action level for the 90<sup>th</sup> percentile of 15 parts per billion (ppb) is established for 1 liter samples taken by public water systems at high-risk residences. The sample was designed to evaluate corrosion control effectiveness.
- Voluntary Testing at Schools & Child Care Centers = 20 ppb AL
  - EPA recommends that schools and child care facilities collect 250 mL first-draw samples from water fountains and faucets, and that the water fountains and/or faucets be taken out of service if the lead level exceeds 20 ppb. The sample was designed to pinpoint specific fountains and faucets that require remediation (e.g., water cooler replacement).



# Issues Related to Lead Testing in Schools and Child Care Facilities

- Non-Transient Non-Community Water Systems do not have a separate sampling protocol, despite the different plumbing configurations as compared to single family residences.
- If a requirement to test in schools and child care facilities that are served by a public water systems was added to the Lead and Copper Rule, how would sampling be conducted.
- Sampling under the 3Ts guidance for schools and child care facilities has a different sampling protocol and goal of sampling than the Lead and Copper Rule.
- Sampling time frame (June – Sept) for systems on reduced monitoring is typically when schools are closed, significantly reducing the available time for a water system to collect a sample from a school facility that is served by a community water systems.

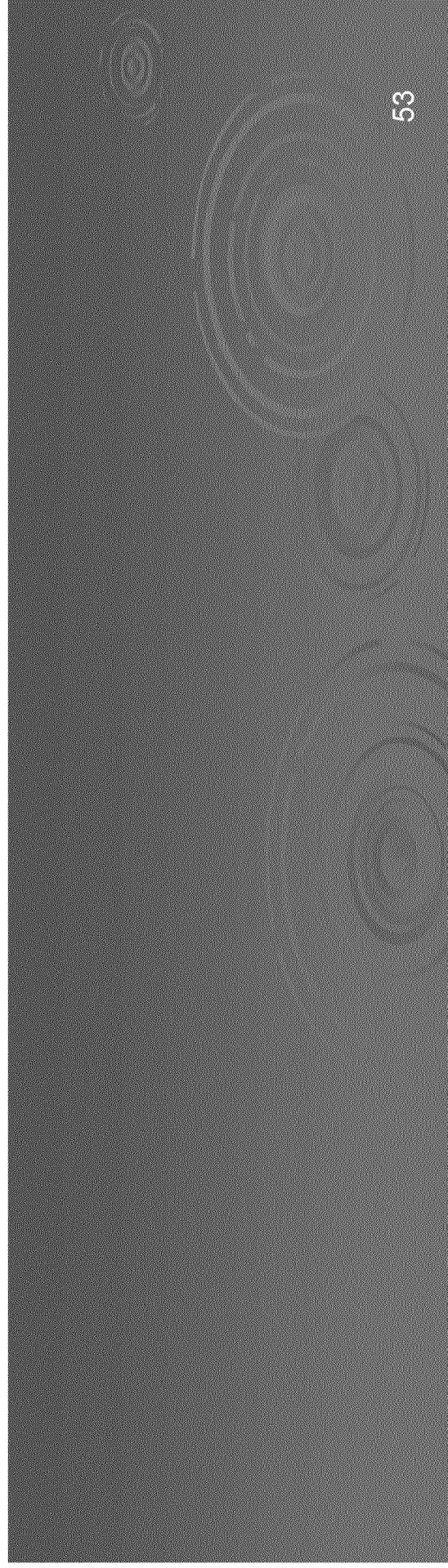


# Possible Changes to Lead and Copper Rule

- Modify the Lead and Copper Rule to include sampling protocol for non-residential buildings.
- Require all CWSs to sample a specific number of schools and child care facilities in the compliance monitoring period as a part of compliance sampling and included in the 90th percentile calculation; or
- Modify the Lead and Copper Rule to include a separate sampling protocol where all CWSs must sample a specific number of schools and child care facilities in the compliance monitoring period. These samples are not included in calculating the 90th %; or

[Speaker Notes For Slide: 52]

(If schools are part of LCR) Publish guidance to address sampling for lead and copper in non-residential buildings  
Include sections on site selection and stagnation times at outlets vs. an entire building.





# Possible Changes to Lead and Copper Rule Continued

- Modify section 141.84 to include additional actions for systems that exceed an AL for lead or copper.
  - Provide specialized PE to schools and child care facilities within service area.
  - Require the PWS to offer to collect samples from schools and child care facilities in the affected areas.



# Key Questions and Considerations

- How would one justify sampling only a percentage of schools within the PWS, or a percentage of taps within a school since the 3Ts guidance encourages sampling all taps.
- Focus on schools only misses most vulnerable population – more water may be consumed in child care facilities, particularly where powdered formula is mixed. Are there other locations we should be targeting (i.e., hospitals)?
- 3Ts focuses on testing for lead in schools and child care facilities; however, copper is an acute contaminant. Should we be sampling for copper in schools and child care facilities as well?
- Should we specify, if all schools or child care facilities will not be tested, that the schools or licensed child care facilities to be tested should be in an underserved communities or EJ areas?



# Key Questions and Considerations

## Continued

- Additional cost for a PWS that exceeds action level, if the PWS has schools and child care facilities in its service area.
- Additional cost for a PWS with schools and child care facilities to test schools and child care facilities in its service area but which are not a part of compliance sampling.
- Additional costs for schools and child care facilities to address problem outlets, conduct expanded testing programs, and manage communications.



# Comments and Feedback?

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**From:** Benzie, Richard (DNRE)  
**Sent:** Monday, August 01, 2011 4:39 PM  
**To:** Kris Philip;Dettweiler, Dan (DEQ)  
**Subject:** FW: MI - UCMR3 draft State Monitoring Plan  
**Attachments:** List 1 draft SMP instructions.pdf; MIDraft SMP.xls

We need to discuss. You both need to review for errors. For instance, I can't believe there is a school in St. Joseph County with 16,000 students on it's own water system! This time, they want customers, not just suppliers. I am so glad we are not involved to any major extent.

---

**From:** UCMR Implementation [<mailto:ucmr3@glec.com>]  
**Sent:** Monday, August 01, 2011 2:54 PM  
**To:** Benzie, Richard (DNRE)  
**Cc:** Pat Churilla; [UCMR\\_Sampling\\_Coordinator@epa.gov](mailto:UCMR_Sampling_Coordinator@epa.gov)  
**Subject:** MI - UCMR3 draft State Monitoring Plan

Dear State UCMR Contact:

The U.S. EPA Technical Support Center (TSC) is requesting your assistance in finalizing the list of public water systems (PWSs) required to participate in the third cycle of the Unregulated Contaminant Monitoring Regulation (UCMR3). Under U.S. EPA Contract EP-C-06-041, Great Lakes Environmental Center, Inc. (GLEC) is assisting TSC with the implementation of UCMR, and has been tasked with coordinating the review process for UCMR3 State Monitoring Plans (SMPs). UCMR3 monitoring, scheduled to begin in January 2013, will consist of Assessment Monitoring (List 1) and Pre-Screen Testing (List 3). In preparation for this monitoring, we have drafted and attached an SMP for your review.

Draft SMPs are being distributed to all primary agencies, including those that decided not to enter into a Partnership Agreement (PA) with EPA to help implement UCMR3. If you are reviewing the SMP, either because your state/tribe/territory signed a PA or because you are a non-partnered entity that has agreed to perform this review, please provide your comments by **September 30, 2011** to allow us to meet our schedule. If you do not provide any comments, the draft will become your final SMP once the final UCMR3 rule is promulgated.

The attached List 1 Draft SMP (a Microsoft Excel workbook) includes all PWSs in your "state" that are expected to participate in Assessment Monitoring under UCMR3, including:

- All large PWSs (those serving a retail population of more than 10,000 persons as of December 31, 2010).
- Selected small PWSs (those serving a retail population of 10,000 or fewer persons as of December 31, 2010).

If small PWSs in your state/tribe/territory have been selected for Pre-Screen Testing (PWSs were not selected for List 3 in every state/tribe/territory), they will be listed in a List 3 Draft SMP, attached as a separate Microsoft Excel spreadsheet.



Also attached are instructions for reviewing and correcting the draft SMP(s). Separate instructions are provided for reviewing the List 3 Draft SMP, if applicable.

If you have any questions please call or email GLEC at 231-941-2230 or [ucmr3@glec.com](mailto:ucmr3@glec.com)

Thank you for your support of this important effort.

--

Great Lakes Environmental Center, Inc.

UCMR Implementation Contractor

(231) 941-2230

[ucmr3@glec.com](mailto:ucmr3@glec.com)



# INSTRUCTIONS FOR REVIEWING U.S. EPA UCMR3

## *Draft State Monitoring Plan (SMP)*

### List 1 Assessment Monitoring

U.S. EPA has prepared a draft SMP for your state/tribe/territory (referred to as “state” in the remainder of this document). The SMP lists, in a Microsoft Excel® workbook provided as a separate attachment to the SMP e-mail message, both small and large public water systems (PWSs) required to participate in the third cycle of the Unregulated Contaminant Monitoring Regulation (UCMR3) program. Eight spreadsheets are included in the workbook: small PWSs are separated according to size and source water type, and large PWSs are separated by source water type. Each spreadsheet may be viewed by clicking on the appropriate “tab,” labeled with the source water type and size category, at the bottom of the workbook.

#### *Size Categories*

##### *Small PWSs*

Separate spreadsheets list *small PWSs* using groundwater (GW) and surface water (SW) sources in the following three size subcategories:

1. Very small (VS) serving 500 or fewer persons
2. Small (S) serving 501 to 3,300 persons
3. Medium (M) serving 3,301 to 10,000 persons

##### *Large PWSs*

Separate spreadsheets list *large PWSs* using GW and SW sources. For UCMR3, there are no size subcategories for large PWSs.

## SMALL SYSTEMS

Each small PWS spreadsheet includes both primary (i.e., selected) and replacement List 1 PWSs in your state. Primary PWSs are listed in the top rows of the spreadsheet; replacement PWSs are listed in the bottom rows of the spreadsheet. Please review the SMP to: 1) verify the applicability of the primary systems, 2) identify appropriate replacements for those primary PWSs that do not meet the applicability criteria, and 3) verify that the information for the applicable PWSs is accurate and complete.

First, verify the applicability of each primary PWS. If a primary PWS meets any of the four reasons for inapplicability listed in the box (right), it must be replaced with the first available applicable system on the replacement list. For instance, the first primary PWS that is determined to be inapplicable on the Small GW spreadsheet must be replaced with the first replacement PWS listed on the Small GW spreadsheet.

Verify the applicability of the replacement PWS. If it is not applicable, check the applicability of the next replacement PWS, and continue until an applicable replacement PWS is identified. In the Primary Systems section, record the reason for replacement on the appropriate row of the column “Reason If Replaced.” In the Replacement Systems section, record the PWSID of the system being replaced on the appropriate row of the column “Primary Replaced.” Second, please review the information for each *primary PWS* (and those selected as replacements for inapplicable primary PWSs) for accuracy and completeness. Correct erroneous information and add missing information on the spreadsheet.

#### Reasons for Inapplicability for Small PWSs

- ☐ It is inactive (e.g., it has been shut down or has merged with another PWS)
- ☐ It is a transient water system
- ☐ It is listed in the wrong size category
- ☐ It is listed in the wrong source water category





## SMALL SYSTEMS (CONTINUED)

Sampling schedules for all small systems are spread across a single calendar year. *Replacement systems will assume the monitoring schedule of the systems they replace.* The SMP indicates the date of the first sampling event (SE) for each PWS. If the schedule is unworkable for any PWS, please indicate a viable alternative on the spreadsheet.

### Assessment Monitoring (List 1) for small PWSs:

1. January 2013 to Dec 2013,
2. January 2014 to Dec 2014, or
3. January 2015 to Dec 2015.

Small **GW** systems  
have the following possible schedules:

1 <sup>st</sup> SE	2 <sup>nd</sup> SE
January	July
February	August
March	September
April	October
May	September
June	December

For UCMR3 Assessment Monitoring (AM or List 1), **GW** systems are required to monitor two times, 5 to 7 months apart, during the designated 12-month monitoring period.

**SW** (and GW under the influence of surface water [GUDI]) systems are required to monitor four times, every 3 months, during the designated 12-month period.

Small **SW and GUDI** systems  
have the following possible schedules:

1 <sup>st</sup> SE	2 <sup>nd</sup> SE	3 <sup>rd</sup> SE	4 <sup>th</sup> SE
January	April	July	October
February	May	August	November
March	June	September	December

## LARGE SYSTEMS

All applicable large PWSs are required to participate in Assessment Monitoring for UCMR3. The draft SMP lists the large PWSs from your state required to participate. If a large PWS meets any of the reasons for inapplicability listed in the box (below), record the reason in the column "Removal."

Please review the information on the SMP for accuracy (i.e., PWS name, contact information, PWS type, source water type, and retail population served as of Dec. 31, 2010). Note that a source water type of "SW" is appropriate for PWSs that have one or more SW or GUDI entry points; a source water type of GW is appropriate for PWSs that have GW entry points exclusively. If changes to the SMP information are needed for any PWS, make the corrections on the spreadsheet.

### Reasons for Inapplicability for Large PWSs

- ☐ It is inactive (e.g., it has been shut down or has merged with another PWS)
- ☐ It is a transient water system
- ☐ It is no longer a large PWS (retail population was below 10,000 on December 31, 2010)



## LARGE SYSTEMS (CONTINUED)

Unlike small systems, large system sampling may be spread across two calendar years. Samples must be collected from *GW* entry points two times, 5 to 7 months apart, and from *SW* (and GUDI) entry points four times, every 3 months, during a 12-month period. Sampling may begin any time between January 2013 and March 2015 for *SW* entry points, or between January 2013 and June 2015 for *GW* entry points, but all UCMR3 sampling must be completed by December 2015. The SMP indicates the date of the first SE for each PWS. If you wish to change the schedule for any PWS, please indicate a viable alternative on the spreadsheet.

Large *GW* entry points have the following possible schedules:

1 <sup>st</sup> SE	2 <sup>nd</sup> SE
January	July
February	August
March	September
April	October
May	November
June	December
July	January
August	February
September	March
October	April
November	May
December	June

Large *SW* and *GUDI* entry points have the following possible schedules:

1 <sup>st</sup> SE	2 <sup>nd</sup> SE	3 <sup>rd</sup> SE	4 <sup>th</sup> SE
January	April	July	October
February	May	August	November
March	June	September	December
April	July	October	January
May	August	November	February
June	September	December	March
July	October	January	April
August	November	February	May
September	December	March	June
October	January	April	July
November	February	May	August
December	March	June	September

Gray cells indicate that the event occurs in the year following the start year.

## CONTACT INFORMATION

If you make changes, please save the workbook to a new file name (e.g., add the word "revised" to the end of the file name) and return the revised draft List 1 SMP to GLEC by **September 30, 2011**. GLEC will implement the necessary changes and send you a final SMP early in 2012. **If you have any questions, call or e-mail GLEC.**

Great Lakes Environmental Center (GLEC)  
 739 Hastings St.  
 Traverse City, MI 49686  
 231-941-2230 phone  
 Attn.: John Bachman  
 or  
 email [UCMR3@glec.com](mailto:UCMR3@glec.com)  
 Re: UCMR3 State Monitoring Plan

	A		B	C
	Michigan Draft SMP - 4 Very Small (Serving 25 to 500 persons) Groundwater system(s) required to monitor			
1			PWSID	PWS Name
2				
3				
4	Primary Systems		MI0002655	Glenn Haven Shores
5			MI0040006	Country Acres Mobile Home Park
6			MI0040343	Haven View Mobile Court
7			MI5220200	Teaching Family Homes School
8	Replacement Systems			
9			MI1320039	Eaton Corp. Proving Grounds
10			MI0040643	Morrice Meadows
11			MI3520179	Darton Archery
12				
13			MI3920019	Vicksburg Schools - Tobey Elementary
14			MI0040370	Hess Lake RV and Mobile Home Park
15			MI6321444	Hour Kidz
16			MI6322369	Bakers of Milford
17			MI3420265	Berger Motor Sales, Inc.
18			MI4120564	Caledonia Child Care
19			MI1020021	Platte River Elementary School
20			MI5620036	Huhtamaki Plastics, Inc.
21			MI4720556	Spiral Industries

	D				E	F	G	H	I	J	K	L
1												
2	Address	City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.			
3												
4												
5	Ogletree Deakins Nash Smoak & Stewart, PC, 20 South Clark Street, 25th Floor	Chicago	IL	60603	Randolph Ruff	(312) 558-1220	CWS	GW	72			
6	Kjk Real Estate Management, 317 Garden Avenue	Holland	MI	49424	Kevin Kammeraad	(616) 392-9200	CWS	GW	282			
7	18505 Northland Drive	Big Rapids	MI	49307	Esther Cookson	(231) 796-2617	CWS	GW	200			
8	1000 Silver Creek Rd.	Marquette	MI	49855	Teaching Family Homes	(906) 249-5437	NTNCWS	GW	35			
9												
10	19218 B Drive South	Marshall	MI	49068	Eaton Corp.	(269) 781-1622	NTNCWS	GW	100			
11	Scotsdale Estates & Countryside Village, 5647 Sashabaw Road	Clarkston	MI	48346	Ron Jacobelli		CWS	GW	258			
12	3540 Darton Road	Hale	MI	48739	Darton Archery	(989) 728-4231	NTNCWS	GW	25			
13	301 S Kalamazoo Ave.	Vicksburg	MI	49097	Vicksburg Community Schools	(269) 321-1000	NTNCWS	GW	305			
14	Hess Lake RV and Mobile Home Park, LLC, 1335 Lone Oak Court	Petoskey	MI	49770	Tom Pfeifle & Ms. Jean Pfeifle	(231) 439-3780	CWS	GW	160			
15	23854 Shinnecock	South Lyon	MI	48178	Steve White	(248) 264-6002	NTNCWS	GW	100			
16	2025 S Milford Road	Milford	MI	48381	Baker	(248) 685-0505	NTNCWS	GW	100			
17	3669 South State Road	Ionia	MI	48846	Berger Dealership		NTNCWS	GW	75			
18	7125 Kraft Ave.	Caledonia	MI	49316	Rene Bennet		NTNCWS	GW	60			
19	9222 Homestead Road	Benzonia	MI	49616	Benzie County Central Schools	(231) 882-9653	NTNCWS	GW	388			
20	5700 W. Shafter	Coleman	MI	48618	Huhtamaki Plastics	(989) 465-6161	NTNCWS	GW	140			
21	1572 N Old US23	Howell	MI	48843	Spiral Industries, Inc.	(810) 632-6300	NTNCWS	GW	40			

	M		N	O	P
1					
2	Schedule				Reason If Replaced
	Year	Month	Week		1 - Inactive 2 - Transient PWS 3 - Size Change 4 - Source Change
3					
4					
5	2013	Jan.	2		
6	2013	May	2		
7	2014	Mar.	2		
8	2014	Apr.	1		
9					Primary Replaced
10	Replacement systems follow the schedule of the system they replace				
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	A	B	C
1	Michigan Draft SMP - 7 Small (Serving 501 to 3,300 persons) Groundwater system(s) required to monitor		
2		PWSID	PWS Name
3			
4	Primary Systems		
5		MI0001002	Oak Pointe
6		MI0004700	Village of New Lothrop
7		MI0006600	Three Oaks
8		MI0040658	Tyrone Woods
9		MI1620084	Inland Lakes School
10		MI6321063	Burt Elementary School
11		MI7520093	Glen Oaks Community College
12	Replacement Systems		
13		MI7220095	Kirtland College
14		MI0001690	City of Croswell
15		MI2320257	Grand Ledge Operations Bldg.
16		MI0005920	City of Sandusky
17		MI1820138	Jays Sporting Goods
18		MI5920311	Montcalm Community College
19		MI7020267	OAISD Careerline Tech. Center
20		MI0001250	Cassopolis
21		MI0000440	Bates Township
22		MI8120373	Whitmore Lake Elementary
23		MI0120109	Alcona Community High School
24		MI0006470	Village of Sunfield
25		MI0004730	Newberry Correctional Facility
26		MI0005010	City of Onaway
27		MI0000320	Augusta
28		MI0000370	Village of Bancroft
29		MI0040617	Canterbury Estates MHP
30		MI0000020	Adams Township
31		MI0001840	Oscola Township
32		MI0003880	Crystal Falls Township - Lind
33		MI0040047	Thornapple Lake Estates

	D		E	F	G	H	I	J	K	L
	Address		City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.
1										
2										
3										
4										
5	Genoa Township, 2911 Dorr Road		Brighton	MI	48116-9436	Greg Tata	(810) 227-5225	CWS	GW	1900
6	7507 Orchard Street, P.O. Box 313		New Lothrop	MI	48460-0313	Jerry Johnson		CWS	GW	610
7	P.O. Box 335		Three Oaks	MI	49128-0335	David Grosse	(269) 756-9221	CWS	GW	1829
8	27883 Independence Street, Apartment 103G		Farmington Hills	MI	48336	Lawrence Becker		CWS	GW	733
9	5243 S Straits Hwy.		Indian River	MI	49749	Inland Lakes School	(231) 238-9363	NTNCWS	GW	900
10	1025 Ortonville		Ortonville	MI	48462	Brandon School District	(248) 627-1818	NTNCWS	GW	1100
11	62249 Shimmel Rd.		Centreville	MI	49032	Glen Oak Community College	(269) 467-9945	NTNCWS	GW	2000
12										
13	10775 N St. Helen Road		Roscommon	MI	48653	Joanne Comerford	(989) 275-5121	NTNCWS	GW	800
14	100 North Howard Street		Croswell	MI	48422	Sue Dobson	(810) 679-2299	CWS	GW	2467
15	220 Lamson Street		Grand Ledge	MI	48837	Matt Losch, Grand Ledge Schools	(517) 627-6151	NTNCWS	GW	610
16	26 West Speaker Road		Sandusky	MI	48471	Paul Cowley	(810) 648-3330	CWS	GW	2916
17	8800 S Clare Avenue, P.O. Box 238		Clare	MI	48617	Brenda Beamish	(989) 386-3475	NTNCWS	GW	900
18	2800 College Dr.		Sidney	MI	48885	Montcalm Community College	(989) 328-2111	NTNCWS	GW	1500
19	13663 Port Sheldon Road		Holland	MI	49424	Careerline Tech Center	(616) 738-8940	NTNCWS	GW	1425
20	117 South Broad, Suite 100		Cassopolis	MI	49031-1301	Julia Bell	(269) 445-8648	CWS	GW	1950
21	3070 US2 East		Iron River	MI	49935	Barbara Moncivais	(906) 265-9555	CWS	GW	1001
22	8845 Main St.		Whitmore Lake	MI	48189	Whitmore Lake Public Schools		NTNCWS	GW	600
23	51 N Barlow Road		Lincoln	MI	48742	Alcona Community High School	(989) 736-8543	NTNCWS	GW	550
24	131 Second Street, P.O. Box 66		Sunfield	MI	48890	Scott Smith	(517) 566-8407	CWS	GW	680
25	3001 Newberry Avenue		Newberry	MI	49868	Barry Davis	(906) 293-6200	CWS	GW	800
26	20774 State Street, P.O. Box 761		Onaway	MI	49765-0761	Joseph Hefele	(989) 733-8313	CWS	GW	993
27	109 West Clinton Street, P.O. Box 216		Augusta	MI	49012-0216	Jim Schultz	(269) 731-5517	CWS	GW	965
28	120 East Warren Street, P.O. Box 97		Bancroft	MI	48414	Shana Post	(989) 634-5375	CWS	GW	616
29	23540 Reynolds Court		Clinton Township	MI	48036	Darryl Swain	(586) 468-4799	CWS	GW	725
30	P.O. Box 520		South Range	MI	49963	Denise Maki	(906) 482-4420	CWS	GW	2010
31	P.O. Box 437		Dollar Bay	MI	49922-0437	Mary Wilmer	(906) 482-8578	CWS	GW	830
32	P.O. Box 329		Crystal Falls	MI	49920	Joann Sepalla	(906) 875-3062	CWS	GW	990
33	729 Academy		Kalamazoo	MI	49007	Scott Carter	(616) 381-4641	CWS	GW	538

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1					
2	Schedule				Reason If Replaced
	Year		Month	Week	1 - Inactive 2 - Transient PWS 3 - Size Change 4 - Source Change
3					
4					
5	2014		June	3	
6	2014		Feb.	1	
7	2015		Apr.	3	
8	2015		Apr.	1	
9	2013		June	3	
10	2015		May	2	
11	2013		May	1	
12					Primary Replaced
13	Replacement systems follow the schedule of the system they replace				
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	A		B	C
1	Michigan Draft SMP - 6 Medium (Serving 3,301 to 10,000 persons) Groundwater system(s) required to monitor			
2			PWSID	PWS Name
3				
4		Primary Systems		
5			MI0001640	City of Corunna
6			MI0003630	Kinross Township
7			MI0004030	City of Manistee
8			MI0004800	Michigan American Water Co.
9			MI0004878	Southwest Oakland Township
10			MI0005900	Saline
11		Replacement Systems		
12			MI0002850	Greenville
13			MI0003090	Hastings
14			MI0003968	Lyon Township
15			MI0001935	East Bay Charter Township
16			MI0005300	City of Petoskey
17			MI0003950	Lowell
18			MI0004380	Milan
19			MI0001370	Chelsea
20				Mancelona Area Water & Sewer Authority
21			MI0004010	
22			MI0003400	Iron Mountain
23			MI0002770	City of Grand Ledge
24			MI0003695	Lake Bella Vista
25			MI0002980	Hancock
26			MI0007120	City of Williamston
27			MI0001170	Carson City
28			MI0004860	Norway
29			MI0006300	City of St. Johns
29			MI0002740	City of Grand Blanc

	D	E	F	G	H	I	J	K	L
	Address	City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.
1									
2									
3									
4									
5	402 North Shiawassee Street	Corunna	MI	48817	Tim Crawford	(989) 743-5040	CWS	GW	3381
6	4884 West Curtis Street	Kinross	MI	49788	Marvin Besteman, Jr.	(906) 495-2913	CWS	GW	7341
7	70 Maple Street, P.O. Box 358	Manistee	MI	49660-0358	Mitch Deisch	(231) 723-7132	CWS	GW	6586
8	311 Fifth Street	Calumet	MI	49913	Steve Dlubala	(906) 337-3502	CWS	GW	3717
9	Oakland Co. Water Resources Commissioner, One Public Works Drive	Waterford	MI	48328	Connie Sims	(248) 858-1441	CWS	GW	5443
10	100 N Harris St.	Saline	MI	48176	Robert Scull	(734) 429-4907	CWS	GW	8940
11									
12	411 S Lafayette St.	Greenville	MI	48838	Michael Chesher	(616) 754-5098	CWS	GW	8333
13	135 West Mill Street	Hastings	MI	49038	Richard Friedrich	(269) 945-2331	CWS	GW	6935
14	Oakland Co. Water Resources Commissioner, One Public Works Drive	Waterford	MI	48328	Connie Sims	(248) 858-1441	CWS	GW	5400
15	East Bay Township, 1965 North Three Mile Road	Traverse City	MI	49686-8501	Glen Lile	(231) 947-8719	CWS	GW	4690
16	101 E Lake St.	Petoskey	MI	49770	Dan Ralley	(231) 347-2500	CWS	GW	9500
17	City Of Lowell, 301 East Main St.	Lowell	MI	49331	Daniel Desjardens	(616) 897-5929	CWS	GW	4013
18	147 Wabash Street	Milan	MI	48160	Ben Swayze	(734) 439-1501	CWS	GW	6610
19	305 South Main Street, Suite 100	Chelsea	MI	48118	Brad Roberts	(734) 475-8113	CWS	GW	5000
20									
21	205 Grove Street, P.O. Box 940	Mancelona	MI	49659	James Macquarrie	(231) 587-0744	CWS	GW	3380
22	501 South Stephenson	Iron Mountain	MI	49801	Jordan Stanchina	(517) 627-5744	CWS	GW	9200
23	200 East Jefferson Street	Grand Ledge	MI	48837	Larry Lahaie	(616) 874-9616	CWS	GW	7813
24	Lake Bella Vista Improvement Association, 6411 Bella Vista Drive	Rockford	MI	49341	Bud Johnson	(616) 874-9616	CWS	GW	3480
25	399 Quincy Street	Hancock	MI	49930-1899	Glenn Anderson	(906) 482-2720	CWS	GW	4500
26	161 East Grand River Avenue	Williamston	MI	48895	Timothy Allard	(517) 655-2774	CWS	GW	3441
27	123 East Main Street, P.O. Box 340	Carson City	MI	48811-0340	Mark Borden	(989) 584-3515	CWS	GW	3553
28	915 Main Street, P.O. Box 99	Norway	MI	49870	Ray Anderson	(906) 563-7502	CWS	GW	3449
29	100 State Street, P.O. Box 477	St. Johns	MI	48879	Jeff Stephens	(989) 224-8944	CWS	GW	7900
29	203 East Grand Blanc Road	Grand Blanc	MI	48439	Matt Wurtz	(810) 694-5420	CWS	GW	8242

	M		N	O	P
1					
2	Schedule				Reason If Replaced
3	Year	Month	Week		1 - Inactive 2 - Transient PWS 3 - Size Change 4 - Source Change
4					
5	2015	Feb.	3		
6	2013	Feb.	3		
7	2014	Jan.	2		
8	2015	Mar.	2		
9	2013	Mar.	2		
10	2013	Apr.	2		
11					Primary Replaced
12	Replacement systems follow the schedule of the system they replace				
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	A	B
	Michigan Draft SMP - 0 Very Small (Serving 25 to 500 persons) Surface Water system(s) required to monitor	
1		
2		PWSID
3		
4	Primary Systems	
5		There are no systems in this category
6	Replacement Systems	
7		

[illegible]

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2	Reason If Replaced
	1 - Inactive 2 - Transient PWS 3 - Size Change 4 - Source Change
3	
4	
5	
6	Primary Replaced
7	

	A	B	C
1	Michigan Draft SMP - 2 Small (Serving 501 to 3,300 persons) Surface Water system(s) required to monitor		
2		PWSID	PWS Name
3			
4	Primary Systems		
5		MI0003565	Kawkawlin Township
6		MI0005540	Portsmouth Township
7	Replacement Systems		
8		MI0004685	New Buffalo Township
9		MI0005031	Orchard Lake Village
10		MI0001195	Caseville Township
11		MI0000280	City of Au Gres
12		MI0001661	Covert Township
13		MI0005330	City of Pinconning

	D	E	F	G	H	I	J	K	L
1									
2	Address	City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.
3									
4									
5	3933 Patterson Road	Bay City	MI	48706	Paul Colbeck	(989) 684-3883	CWS	SWP	2973
6	3933 Patterson Road	Bay City	MI	48706	Paul Colbeck	(989) 684-3883	CWS	SWP	535
7									
8	17425 Red Arrow Highway	New Buffalo	MI	49117	Rosann Dudiak	(269) 469-1011	CWS	SWP	2410
9	Oakland Co. Water Resources Commissioner, One Public Works Drive	Waterford	MI	48328	Connie Sims	(248) 858-1441	CWS	SWP	2806
10	6767 Main Street, P.O. Box. 519	Caseville	MI	48725	Larry Degg	(989) 856-3053	CWS	SWP	1743
11	124 West Huron Road, P.O. Box 121	Au Gres	MI	48703-0121	Patricia Killingbeck	(989) 876-8818	CWS	SWP	1028
12	1199 8th Avenue	South Haven	MI	49090	Roger Huff	(269) 637-0719	CWS	SWP	1540
13	208 Manitou Street, P.O. Box 628	Pinconning	MI	48650-0628	Richard Byrne	(989) 879-2360	CWS	SWP	1386



	M		N	O	P
1					
2	Schedule				Reason If Replaced
3	Year	Month	Week		1 - Inactive 2 - Transient PWS 3 - Size Change 4 - Source Change
4					
5	2015	Mar.	1		
6	2014	Mar.	3		
7					Primary Replaced
8	Replacement systems follow the schedule of the system they replace				
9					
10					
11					
12					
13					

	A		B	C
1	Michigan Draft SMP - 7 Medium (Serving 3,301 to 10,000 persons) Surface Water system(s) required to monitor			
2			PWSID	PWS Name
3				
4				
5		Primary Systems	MI0000340	Bad Axe
6			MI0000635	Berlin Township
7			MI0002960	Hampton Township
8			MI0004250	Menominee
9			MI0004577	Muskegon County - Northside Water System
10			MI0005800	Roosevelt Park
11			MI0006310	St. Joseph
12				
13		Replacement Systems	MI0005400	Plymouth
14				
15			MI0000740	Blackman Township
16			MI0000110	Algonac
17			MI0003290	Hudsonville
18			MI0000140	City of Alma
19			MI0000485	Bay Co. Dept. of Water & Sewer
20			MI0005750	Rockwood
21			MI0004375	Midland Co., Water Dist. No. 1
22			MI0000605	Benton Charter Township
23			MI0003856	Lexington/Worth Twps. Utilities
24			MI0003800	Lathrup Village
25			MI0003628	Kimball Township
26			MI0007125	Williams Township
27			MI0001290	Center Line
28			MI0005040	Oscoda Township
29			MI0004780	North Muskegon
30			MI0006505	City of Swartz Creek
31			MI0002340	City of Flushing
32			MI0005690	River Rouge
33			MI0007135	City of Wixom
34			MI0003390	Ira Township

	D	E	F	G	H	I	J	K	L
1	Address	City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.
2									
3									
4									
5	300 East Huron Avenue	Bad Axe	MI	48413-1449	John Nugent	(989) 269-7681	CWS	SWP	3574
6	8000 Swan View	Newport	MI	48166	Dave Roberts	(734) 586-8680	CWS	SWP	9700
7	801 W Center Ave., P.O. Box 187	Bay City	MI	48707	Tom Foret	(989) 892-4841	CWS	SWP	9902
8	2511 Tenth Street	Menominee	MI	49858	Richard Goode	(906) 863-2656	CWS	SW	9398
9	131 East Apple Avenue	Muskegon	MI	49442	John Warner	(231) 724-6446	CWS	SWP	3778
10	900 Oakridge Street	Roosevelt Park	MI	49441	David W. Boehm	(231) 755-3721	CWS	SWP	3890
11	700 Broad Street	St. Joseph	MI	49085-1276	Frank Walsh	(269) 983-5541	CWS	SW	8789
12									
13	201 South Main Street	Plymouth	MI	48170	Paul Sincock	(734) 453-1234	CWS	SWP	9413
14	City Of Jackson Water Department, 521 Water Street	Jackson	MI	49203	Ron Shaw	(517) 768-6107	CWS	GUP	8288
15	1530 St. Clair River Drive	Algonac	MI	48001	Gary Trese	(810) 794-3281	CWS	SW	4800
16	3275 Central Boulevard	Hudsonville	MI	49426-1450	Patrick Waterman	(616) 669-0200	CWS	SWP	7750
17	525 East Superior Street, P.O. Box 278	Alma	MI	48801-0278	Doug Thomas		CWS	SW	9275
18	3933 Patterson Road	Bay City	MI	48706	Paul Colbeck	(989) 684-3883	CWS	SWP	8128
19	32409 Fort Street	Rockwood	MI	48173	Dan Guzzi		CWS	SWP	3442
20	246 E. Price Road, P.O. Box 320	Sanford	MI	48657-0320	Ron Rose	(989) 687-2709	CWS	SWP	7030
21	1725 Territorial Road	Benton Harbor	MI	49022-1940	Nora Jefferson	(269) 925-0616	CWS	SWP	6700
22	7265 Lakeshore	Lexington	MI	48450	Jerry Scott	(810) 359-2742	CWS	SWP	3750
23	27400 Southfield Road	Lathrup Village	MI	48076	Jeff Mueller	(248) 557-2600	CWS	SWP	4236
24	2150 Wadhams Road	Kimball	MI	48074	Wayne Van Nest	(810) 985-3599	CWS	SWP	3900
25	3933 Patterson Road	Bay City	MI	48706	Paul Colbeck	(989) 684-3883	CWS	SWP	4694
26	7070 E. 10 Mile Road	Center Line	MI	48015	Gary McKinney	(586) 458-8278	CWS	SWP	8308
27	110 South State Street	Oscoda	MI	48750-1633	Robert Stalker II	(989) 739-3211	CWS	SWP	7268
28	1502 Ruddiman Avenue	North Muskegon	MI	49445-3098	Bruce Moore	(231) 744-3022	CWS	SWP	4031
29	8083 Civic Drive	Swartz Creek	MI	48473-1498	Paul Bueche	(810) 635-4464	CWS	SWP	6800
30	725 East Main Street	Flushing	MI	48433	Bryan Sutton	(810) 659-8391	CWS	SWP	8751
31	5 Marion Avenue	River Rouge	MI	48218	Christopher Beaudrie	(313) 842-4803	CWS	SWP	9851
32	2059 Charnas Road	Wixom	MI	48393	Joseph Liberadzki	(248) 960-0870	CWS	SWP	9220
33	7085 Meldrum Road	Fair Haven	MI	48023-0309	Eric Barnowski	(586) 725-7231	CWS	SW	8556

	M		N	O	P
1					
2	Schedule				Reason If Replaced
3	Year	Month	Week		1 - Inactive 2 - Transient PWS 3 - Size Change 4 - Source Change
4					
5	2015	Feb.	2		
6	2013	Jan.	2		
7	2014	Feb.	1		
8	2015	Jan.	1		
9	2013	Feb.	3		
10	2015	Feb.	2		
11	2014	Jan.	3		
12					Primary Replaced
13	Replacement systems follow the schedule of the system they replace				
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1	Michigan Draft SMP - 23 Large (Serving greater than 10,000 persons) Groundwater system(s) required to monitor			
2			PWSID	PWS Name
3				
4				
5			MI0000450	Battle Creek - Verona System
6			MI0000540	Beecher Metropolitan District
7			MI0000710	Big Rapids
8			MI0001500	Coldwater
9			MI0001790	Delta Charter Township
10			MI0001990	City of East Lansing
11			MI0002270	City of Fenton
12			MI0003342	Independence Township
13			MI0003370	Ionia
14			MI0003470	Jackson
15			MI0003520	Kalamazoo
16			MI0003760	Lansing Board of Water & Light
17			MI0004098	MIHOG Sewer & Water Authority
18			MI0004340	Michigan State University
19			MI0004740	Niles
20			MI0005120	City of Owosso
21			MI0005520	Portage
22			MI0006110	City of South Lyon
23			MI0006440	Sturgis
24			MI0006450	Summit Township
25			MI0006725	Union Township
26			MI0006910	Waterford Township
27			MI7520179	St. Joseph Intern School District

	D	E	F	G	H	I	J	K	L	M	N
	Address	City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.	Schedule	Month
1										Year	
2											
3											
4											
5	10 N. Division Street, Suite 206	Battle Creek	MI	49037	Kenneth Tsuchiyama	269-966-3343	CWS	GW	43975	2014	Nov.
6	G-1057 W. Louis Avenue	Flint	MI	48505	Richard Wurtz		CWS	GW	12793	2015	Jan.
7	226 N. Michigan Avenue	Big Rapids	MI	49307	Donald Greiner	231-592-4018	CWS	GW	10858	2014	Apr.
8	1 Grand Street	Coldwater	MI	49036	Brian Musselman	517-279-4805	CWS	GW	10550	2013	Apr.
9	7000 W. Willow Highway	Lansing	MI	48917	Thomas Morrissey	517-323-8570	CWS	GWP	22300	2013	Aug.
10	410 Abbott Road	East Lansing	MI	48823	Todd Sneathen		CWS	GWP	30500	2014	Apr.
11	301 S. Leroy Street	Fenton	MI	48430	Leslie Bland	810-629-2261	CWS	GW	12000	2014	May
12	2050 Flemings Lake Road	Clarkston	MI	48346	Linda Richardson	248-625-8222	CWS	GW	10362	2013	Aug.
13	114 N. Kidd Street	Ionia	MI	48846	Jason Eppler	616-527-4170	CWS	GW	12000	2014	Nov.
14	521 Water Street	Jackson	MI	49203	Paul Hudson	517-788-4073	CWS	GW	37873	2013	Mar.
15	241 W. South Street	Kalamazoo	MI	49007	Ken Collard	269-337-8660	CWS	GW	150000	2013	Dec.
16	P.O. Box 13007	Lansing	MI	48901	William Maier	517-702-6813	CWS	GW	142000	2015	Feb.
17	2911 Dor Road	Brighton	MI	48116	Greg Tataara	810-227-5225	CWS	GW	13944	2013	Mar.
18	T.B. Simon Power Plant	East Lansing	MI	48824	Douglas MacDonald	517-355-3314	CWS	GW	16300	2014	Dec.
19	508 E. Main Street	Niles	MI	49120	Terry Eull		CWS	GW	14815	2014	Apr.
20	301 W. Main Street	Owosso	MI	48867	Gary Burk	989-725-0555	CWS	GW	15713	2014	July
21	7900 S. Westnedge Avenue	Portage	MI	49002	Maurice Evans	269-329-4404	CWS	GW	44897	2013	Apr.
22	335 S. Warren	South Lyon	MI	48178	Robert Martin	248-437-4006	CWS	GW	11055	2013	Oct.
23	130 N. Nottawa Street	Sturgis	MI	49091	Michael Hughes	269-651-2321	CWS	GW	11920	2015	Feb.
24	2121 Ferguson Drive	Jackson	MI	49203	Rick Faling	517-788-4113	CWS	GW	21544	2014	Mar.
25	2010 S. Lincoln Road	Mt. Pleasant	MI	48858	Kim Smith	989-772-4600	CWS	GW	11694	2013	Aug.
26	5240 Civic Center Drive	Waterford	MI	48329	Terry Biederman	248-618-7451	CWS	GW	65076	2013	Dec.
27	P.O. Box 219	Centreville	MI	49032	Dir. Drinking Water Utility	269-467-5400	NTNCWS	GW	16000	2013	July

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1	
2	Removal
	1 - Inactive
	2 - Transient PWS
3	3 - Size Change*
4	* retail population below 10,000 on 12/31/2010
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1	Michigan Draft SMP - 117 Large (Serving greater than 10,000 persons) Surface Water system(s) required to monitor			
2			PWSID	PWS Name
3				
4				
5			MI0000040	Adrian
6			MI0000127	Allendale Township
7			MI0000130	Allen Park
8			MI0000160	City of Alpena
9			MI0000220	Ann Arbor
10			MI0000325	Rochester Hills
11			MI0000390	Bangor Township
12			MI0000470	City of Bay City
13			MI0000600	Benton Harbor
14			MI0000630	Berkley
15			MI0000690	Beverly Hills
16			MI0000730	Birmingham
17			MI0000790	Bloomfield Township
18			MI0000840	Bridgeport Township
19			MI0000940	Brownstown Township
20			MI0000980	Buena Vista Township
21			MI0001010	City of Burton
22			MI0001023	Byron-Gaines Utility Authority
23			MI0001100	Canton Township
24			MI0001390	Chesterfield Township
25			MI0001440	Clawson
26			MI0001480	Clinton Township
27			MI0001573	Commerce Township
28			MI0001730	Dearborn
29			MI0001740	Dearborn Heights
30			MI0001800	City of Detroit
31			MI0001950	Eastpointe
32			MI0001960	East Grand Rapids
33			MI0002050	Ecorse
34			MI0002170	Escanaba
35			MI0002230	City of Farmington
36			MI0002240	City of Farmington Hills
37			MI0002280	Ferndale
38			MI0002310	City of Flint
39			MI0002385	Fort Gratiot Township
40			MI0002460	Fraser
41			MI0002500	Frenchtown Township
42			MI0002550	Garden City
43			MI0002565	Garfield Charter Township
44			MI0002615	Genesee County Water System
45			MI0002620	Georgetown Township



	D	E	F	G	H	I	J	K	L	M	N
	Address	City	State	Zip	Contact Name	Phone	PWS Type	Source	Pop.	Schedule	Month
1										Year	
2											
3											
4											
5	135 E. Maumee Street	Adrian	MI	49221	Shane Horn	517-264-4825	CWS	SWP	22275	2013	Aug.
6	6676 Lake Michigan Drive	Allendale	MI	49401	Steven Boss	616-895-6295	CWS	SWP	17543	2013	Dec.
7	16125 White	Allen Park	MI	48101	Rick Lang	313-928-0550	CWS	SWP	29376	2013	May
8	208 N. 1st Avenue	Alpena	MI	49707	Thad Taylor	989-354-1700	CWS	SW	11304	2013	Mar.
9	919 Sunset	Ann Arbor	MI	48103	Larry Sanford	734-764-6426	CWS	SW	114000	2013	Dec.
10	1000 Rochester Hills Drive	Rochester Hills	MI	48309	Roger Rouse	248-841-2497	CWS	SWP	69739	2014	June
11	3933 Patterson Road	Bay City	MI	48706	Paul Colbeck	989-684-3883	CWS	SWP	12536	2014	Aug.
12	2691 N. Euclid	Bay City	MI	48706	Tom Levegood	989-686-8300	CWS	SW	36817	2014	Nov.
13	200 E. Wall Street	Benton Harbor	MI	49022	Ron Carter, Jr.	269-927-8400	CWS	SW	11218	2013	Oct.
14	3238 Bacon	Berkley	MI	48072	Bruce Jerome	248-638-3490	CWS	SWP	15531	2014	Sep.
15	18500 W. 13 Mile Road	Beverly Hills	MI	48025	Thomas Meszler	248-646-6404	CWS	SWP	10451	2014	Mar.
16	P.O. Box 3001	Birmingham	MI	48012	Dennis Dembiec	248-644-3865	CWS	SWP	19293	2014	Dec.
17	4200 Telegraph Road	Bloomfield Hills	MI	48303	Thomas Trice	248-594-2801	CWS	SWP	43023	2013	Aug.
18	6206 Dixie Highway	Bridgeport	MI	48722	Rose Licht	989-777-0940	CWS	SWP	11709	2014	May
19	21313 Telegraph Road	Brownstown	MI	48183	Arthur Wright	734-675-0071	CWS	SWP	29000	2014	Oct.
20	1160 S. Outer Drive	Saginaw	MI	48601	Bregitte Braddock	989-754-6536	CWS	SWP	10318	2013	Feb.
21	4303 S. Center Road	Burton	MI	48519	Dave Marshke	810-742-9230	CWS	SWP	20900	2014	Jan.
22	8555 SE Kalamazoo Avenue	Caledonia	MI	49316	Jan Boone	616-698-6640	CWS	SWP	23902	2015	Jan.
23	1150 S. Canton Center Road	Canton	MI	48188	Bob Belair	734-394-5153	CWS	SWP	89000	2013	Feb.
24	52216 Sierra	Chesterfield Township	MI	48047	Joe Gayeski	586-949-0400	CWS	SWP	40000	2014	Apr.
25	425 N. Main Street	Clawson	MI	48017	Richard Haberman		CWS	SWP	12732	2014	Oct.
26	40700 Romeo Plank Road	Clinton Township	MI	48038	Bob Cannon	586-286-8000	CWS	SWP	98500	2015	Mar.
27	1 Public Works Drive	Waterford	MI	48328	Connie Sims	248-838-1441	CWS	SWP	17400	2014	July
28	2951 Greenfield Road	Dearborn	MI	48120	James Taylor	313-943-2372	CWS	SWP	97775	2014	June
29	24600 Van Born	Dearborn Heights	MI	48125	Jack Franzil	313-791-6000	CWS	SWP	58264	2013	Jan.
30	735 Randolph Street	Detroit	MI	48826	Gary Fujita		CWS	SW	899387	2014	Oct.
31	23200 Gratiot Avenue	Eastpointe	MI	48021	Darwin Parks	586-445-5016	CWS	SWP	33851	2015	Feb.
32	750 SE Lakeside Drive	East Grand Rapids	MI	49506	Kenneth Feldt	616-940-4817	CWS	SWP	10764	2013	May
33	3869 W. Jefferson	Ecorse	MI	48229	Joyce Parker		CWS	SWP	11229	2013	Mar.
34	P.O. Box 948	Escanaba	MI	49829	James O'Toole	906-786-9402	CWS	SW	13659	2013	Sep.
35	33720 W. 9 Mile Road	Farmington	MI	48335	Kevin Gushman	248-473-7250	CWS	SWP	10300	2014	Mar.
36	31555 11 Mile Road	Farmington Hills	MI	48336	Tom Biassel	248-473-9520	CWS	SWP	72460	2013	Oct.
37	521 E. Cambourne	Femdale	MI	48220	Byron Photiades	248-546-2519	CWS	SWP	22105	2015	Feb.
38	4500 N. Dort Highway	Flint	MI	48505	Brent Wright	810-787-6537	CWS	SWP	124943	2013	Mar.
39	3720 Keewahdin Road	Ft. Gratiot	MI	48059	Robert Crawford	810-385-4489	CWS	SWP	11153	2013	Feb.
40	31250 Kendall	Fraser	MI	48026	Bernard Van Fleteeren	586-293-1977	CWS	SWP	16500	2013	Apr.
41	5300 N. Dixie Highway	Newport	MI	48166	Richard Weirich	734-289-1015	CWS	SW	17374	2014	Mar.
42	31800 Beechwood	Garden City	MI	48135	Jack Barnes	734-793-1800	CWS	SWP	27922	2013	Mar.
43	3848 Veterans Drive	Traverse City	MI	49684	Chuck Korn	231-941-1620	CWS	SWP	10764	2013	Jan.
44	G-4610 Beecher Road	Flint	MI	48532	John O'Brien	810-732-7870	CWS	SWP	76500	2013	Sep.
45	1515 Baldwin Street	Jenison	MI	49428	Date Mohr	616-457-2340	CWS	SWP	39584	2013	July

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2	Removal	
	1 - Inactive	
3	2 - Transient PWS	
4	3 - Size Change*	
5	* retail population below 10,000 on 12/31/2010	
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46		MI0002745	Grand Blanc Township
47		MI0002750	Grand Haven
48		MI0002760	Grand Haven Township
49		MI0002790	Grand Rapids
50		MI0002820	Grandville
51		MI0002870	Grosse Ile Township
52		MI0002900	Grosse Pointe Park
53		MI0002920	Grosse Pointe Woods
54		MI0002970	Hamtramck
55		MI0003020	Harper Woods
56		MI0003040	Harrison Township
57		MI0003100	Hazel Park
58		MI0003140	Highland Park
59		MI0003190	Holland Board of Public Works
60		MI0003195	Holland Township Consolidated
61		MI0003320	Huron Township
62		MI0003360	Inkster
63		MI0003620	Kentwood
64		MI0003726	Southwest MI Regional Sanitary Sewer
65		MI0003870	Lincoln Park
66		MI0003930	Livonia
67		MI0003990	Macomb Township
68		MI0004000	Madison Heights
69		MI0004120	Marquette
70		MI0004220	Melvindale
71		MI0004260	Meridian Township
72		MI0004370	City of Midland
73		MI0004450	Monroe
74		MI0004455	Monroe South County
75		MI0004510	City of Mt. Clemens
76		MI0004530	City of Mt. Pleasant
77		MI0004570	Muskegon
78		MI0004580	Muskegon Heights
79		MI0004670	City of New Baltimore
80		MI0004845	Northville Township
81		MI0004850	Norton Shores
82		MI0004870	City of Novi
83		MI0004880	Oak Park
84		MI0005035	Orion Township
85		MI0005203	Park Township (HBPW Service Area)
86		MI0005360	Pittsfield Township
87		MI0005370	Plainfield Township
88		MI0005420	Plymouth Township
89		MI0005440	Pontiac
90		MI0005450	Auburn Hills
91		MI0005480	Port Huron
92		MI0005640	Redford Township
93		MI0005710	Riverview

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46	P.O. Box 1833	Grand Blanc	MI	48439	Dave Hobson	810-424-2600	CWS	SWP	18000	2013	Nov.
47	519 Washington Avenue	Grand Haven	MI	49417	Julie Beaton	616-847-3493	CWS	SWP	11268	2013	Oct.
48	13300 168th Avenue	Grand Haven	MI	49417	Karl French	616-842-5988	CWS	SWP	13819	2013	May
49	1900 Oak Industrial Drive, NE	Grand Rapids	MI	49505	Cindy Kersten	616-456-3793	CWS	SW	249069	2014	July
50	4095 White Street	Grandville	MI	49418	Ron Carr	616-530-4992	CWS	SWP	16263	2014	Apr.
51	9601 Groh Road	Grosse Ile	MI	48138	Dale Reaume	734-676-4422	CWS	SWP	11039	2014	June
52	15115 E. Jefferson	Grosse Pointe Park	MI	48230	Pat Thomas	313-822-5100	CWS	SWP	12450	2013	Oct.
53	1200 Parkway	Grosse Pointe Woods	MI	48236	Joseph Ahee	313-343-2460	CWS	SWP	17085	2013	June
54	3401 Evaline	Hamtramck	MI	48212	Martin Ladd	313-876-7700	CWS	SWP	22994	2014	Jan.
55	19600 E. 8 Mile	Harper Woods	MI	48225	Bill Snyder	313-343-2570	CWS	SWP	14254	2014	Sep.
56	38151 L'Anse Creuse Road	Harrison Township	MI	48045	William Kinney	586-466-1426	CWS	SWP	25000	2013	July
57	24211 Couzens	Hazel Park	MI	48030	Christopher Duberg	248-546-4060	CWS	SWP	18506	2014	May
58	12050 Woodward Avenue	Highland Park	MI	48203	Hubert Yopp	616-355-5062	CWS	SW	16746	2013	Dec.
59	625 Hastings Avenue	Holland	MI	49423	Dave Koster	616-396-2345	CWS	SW	35048	2013	Feb.
60	353 N. 120th	Holland	MI	49422	Donald Komejan	616-353-3442	CWS	SWP	35519	2013	Nov.
61	37290 Huron River Drive	New Boston	MI	48164	Bruce Wood	313-753-9781	CWS	SWP	14485	2013	June
62	26900 Princeton	Inkster	MI	48141	Peter Gurezynski	313-563-9781	CWS	SWP	30115	2015	Mar.
63	5068 Breton Avenue	Kentwood	MI	49508	John Gorney	616-554-0825	CWS	SWP	30000	2014	Jan.
64	P.O. Box 200	St. Joseph	MI	49085	Chuck Garlanger		CWS	SWP	21400	2013	Nov.
65	500 Southfield	Lincoln Park	MI	48146	Robert Bartok	313-386-9000	CWS	SWP	40010	2014	Dec.
66	12973 Farmington Road	Livonia	MI	48150	Don Rohraff	734-466-2607	CWS	SWP	96900	2014	June
67	51650 Card Road	Macomb	MI	48042	Gerald Wangelin	586-598-0687	CWS	SWP	83500	2015	Mar.
68	801 Ajax Drive	Madison Heights	MI	48071	Richard Hillman	248-589-2294	CWS	SWP	31101	2013	Dec.
69	300 W. Baraga Avenue	Marquette	MI	49855	Judy Akkala	906-228-0436	CWS	SW	22196	2013	Apr.
70	3100 Oakwood Blvd.	Melvindale	MI	48122	Eric Witte	313-429-1061	CWS	SWP	10735	2014	Nov.
71	5151 Marsh Road	Okemos	MI	48864	Raymond Severy	517-349-1200	CWS	SWP	35000	2014	Nov.
72	P.O. Box 1647	Midland	MI	48641	Dave Love	989-837-3515	CWS	SWP	41054	2013	Sep.
73	915 E. Front Street	Monroe	MI	48161	Chris Knight	734-241-5947	CWS	SW	42960	2013	Mar.
74	335 Lavoy Road	Erie	MI	48133	Ed Cousino	734-847-8360	CWS	SWP	34600	2015	Jan.
75	1750 Clara	Mt. Clemens	MI	48043	Charles Bellmore	586-469-6889	CWS	SW	18405	2014	Mar.
76	1303 N. Franklin	Mt. Pleasant	MI	48858	Malcolm Fox	989-779-5426	CWS	SW	25983	2013	Aug.
77	1900 Beach Street	Muskegon	MI	49441	Robert Veneklasen	231-724-4104	CWS	SW	39402	2014	Oct.
78	2724 Peck Street	Muskegon Heights	MI	49444	Daryl Vandyke	231-780-3415	CWS	SW	11741	2013	Sep.
79	36280 Front Street	New Baltimore	MI	48047	Andrew Messina	586-725-7300	CWS	SW	12720	2013	Mar.
80	44405 Six Mile Road	Northville	MI	48168	Donald Weaver	248-662-0495	CWS	SWP	25511	2013	Jan.
81	4814 Henry Street	Norton Shores	MI	49441	Gerald Bartoszek	231-799-6803	CWS	SWP	20878	2013	July
82	26300 Delwal Drive	Novi	MI	48375	Bob Hayes	248-735-5606	CWS	SWP	41581	2014	May
83	10600 Capital Avenue	Oak Park	MI	48237	Kevin Yee	248-691-7497	CWS	SWP	32399	2014	Aug.
84	2525 Joslyn Road	Lake Orion	MI	48360	Bill Ireland	248-393-7018	CWS	SWP	33000	2013	Apr.
85	52 152nd Avenue	Holland	MI	49424	Gerald Felix	616-738-4229	CWS	SWP	11009	2013	July
86	6201 W. Michigan	Ann Arbor	MI	48108	Mandy Grewal	734-822-3136	CWS	SWP	20000	2015	Feb.
87	5195 NE Plamfield Avenue	Grand Rapids	MI	49525	Rick Solle	616-363-9660	CWS	GU	29502	2013	June
88	9955 N. Haggerty Road	Plymouth	MI	48170	Tom Hollis	734-354-3270	CWS	SWP	27798	2014	Apr.
89	522 S. Opydke Road	Pontiac	MI	48341	Gregory McCaffery	248-738-3711	CWS	SWP	66337	2014	Sep.
90	1500 Brown Road	Auburn Hills	MI	48326	Dave Harran	248-391-3777	CWS	SWP	20274	2015	Jan.
91	1200 Pine Grove Avenue	Port Huron	MI	48060	Norman Hurren	810-984-9782	CWS	SW	33800	2014	June
92	12200 Beech-Daly	Redford	MI	48239	John Selmi	313-387-2667	CWS	SWP	51475	2014	Dec.
93	14100 Civic Park Drive	Riverview	MI	48193	Larry Hunter	734-281-4270	CWS	SWP	13189	2013	May

	A	B	C
94		MI0005785	Romulus
95		MI0005820	Roseville
96		MI0005830	City of Royal Oak
97		MI0005850	City of Saginaw
98		MI0005860	Saginaw Charter Township
99		MI0005950	Sault Ste. Marie
100		MI0006010	Shelby Township
101		MI0006160	Southfield
102		MI0006170	Southgate
103		MI0006280	St. Clair Shores
104		MI0006385	Sterling Heights
105		MI0006460	Sumpter Township
106		MI0006490	Superior Township
107		MI0006545	Taylor
108		MI0006580	Thomas Township
109		MI0006640	City of Traverse City
110		MI0006650	Trenton
111		MI0006690	Troy
112		MI0006770	Van Buren Township
113		MI0006900	City of Warren
114		MI0006905	Washington Township
115		MI0006950	Wayne
116		MI0006975	West Bloomfield Township
117		MI0007040	Westland
118		MI0007180	Woodhaven
119		MI0007210	Wyandotte
120		MI0007220	Wyoming
121		MI0007260	Ypsilanti Community Utility Authority

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94	12600 Wayne	Romulus	MI	48174	Thomas Wilson	734-955-8755	CWS	SWP	22944	2014	Mar.
95	29777 Gratiot Avenue	Roseville	MI	48066	Steven Truman	586-445-5410	CWS	SWP	48125	2014	Feb.
96	1600 Campbell	Royal Oak	MI	48068	Jeffrey Pierce	248-246-3319	CWS	SWP	60062	2013	June
97	1315 S. Washington Avenue	Saginaw	MI	48601	Thomas Darnell	989-759-1610	CWS	SWP	61799	2013	Sep.
98	4980 Shattuck Road	Saginaw	MI	48608	Ron Lee	989-791-9870	CWS	SWP	39657	2013	Sep.
99	325 Court Street	Sault Ste. Marie	MI	49783	Spencer Nebel	906-635-5261	CWS	SW	14689	2014	Oct.
100	777 Sawgrass Corporate Parkway	Shelby Township	MI	48316	Ted Schoenherr	586-726-7272	CWS	SWP	72000	2014	Feb.
101	26000 Evergreen	Southfield	MI	48076	Gary Mekjian	248-796-4804	CWS	SWP	78250	2014	Mar.
102	14719 Schafer Court	Southgate	MI	48195	Keith Tackett	734-258-3079	CWS	SWP	31880	2014	Apr.
103	27600 Jefferson Circle	St. Clair Shores	MI	48081	Kenneth Podolski	586-447-3310	CWS	SWP	63098	2013	Jan.
104	7200 18 Mile Road	Sterling Heights	MI	48314	Sal Conigliaro	586-268-7516	CWS	SWP	127000	2013	Aug.
105	23480 Sumpter Road	Belleville	MI	48111	Johnnie Vawters	734-461-6201	CWS	SWP	12100	2013	Feb.
106	575 E. Clark Road	Ypsilanti	MI	48198	Rick Church	734-480-5500	CWS	SWP	13000	2013	Nov.
107	25605 Northline Road	Taylor	MI	48180	David Mackie	734-374-1473	CWS	SWP	65868	2013	June
108	249 N. Miller Road	Saginaw	MI	48609	Russell Taylor	989-781-0150	CWS	SWP	11877	2014	Oct.
109	400 Boardman Avenue	Traverse City	MI	49684	Ben Bifoss		CWS	SW	14532	2013	Oct.
110	1431 West Road	Trenton	MI	48183	Gary Zuk	734-675-8470	CWS	SWP	19584	2013	Aug.
111	4693 Rochester Road	Troy	MI	48098	Richard Shepler	248-524-3395	CWS	SWP	85000	2013	Jan.
112	46425 Tyler Road	Belleville	MI	48111	Todd Knepper	734-699-8947	CWS	SWP	23559	2013	Dec.
113	1 City Square	Warren	MI	48093	James Fouts		CWS	SWP	138247	2013	May
114	57900 Van Dyke	Washington	MI	48094	Steve Hohensee	586-677-4230	CWS	SWP	22577	2013	Jan.
115	35200 Forest	Wayne	MI	48184	Tom MacDonald	734-721-8600	CWS	SWP	19093	2014	May
116	2400 Haggerty Road	West Bloomfield	MI	48323	Edwin Haapala	248-451-4785	CWS	SWP	49429	2014	Nov.
117	37137 Marquette	Westland	MI	48185	Kevin Buford	734-467-3241	CWS	SWP	86602	2015	Jan.
118	28140 Van Horn	Woodhaven	MI	48183	Scott Foley	734-675-4919	CWS	SWP	13000	2014	July
119	3005 Biddle Avenue	Wyandotte	MI	48192	William Weirich	734-324-7142	CWS	SW	28006	2013	Dec.
120	2660 SE Burlingame Avenue	Wyoming	MI	49509	William Dooley	616-530-7262	CWS	SW	70122	2013	Oct.
121	2777 State Road	Ypsilanti	MI	48198	Jeff Castro	734-544-7305	CWS	SWP	92876	2014	Feb.

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**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, June 11, 2012 3:05 PM  
**To:** Prysby, Mike (DEQ)  
**Subject:** FW: Flint Needs

What do you think? Should we reply and argue that it is a commitment? Do we have anything more current about the city's commitment to participate in KWA, or has nothing changed?

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**From:** Michelle Lee [<mailto:Michelle.Lee@cadmusgroup.com>]  
**Sent:** Monday, June 11, 2012 1:38 PM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint Needs

Richard and Mike-

We reviewed the letter from the City of Flint that you submitted to document commitment by the City of Flint to participate in the KWA project. Based on the letter and the e-mail below, it appears that Flint is still considering their options and are not committed to the KWA project; therefore, we have not included the KWA project in the City of Flint's survey.

Thanks,  
Michelle Lee  
The Cadmus Group, Inc.  
2620 Colonial Drive, Ste. A  
Helena, MT 59601  
(406) 457-5225  
[michelle.lee@cadmusgroup.com](mailto:michelle.lee@cadmusgroup.com)

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**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]  
**Sent:** Monday, May 21, 2012 1:24 PM  
**To:** Needs Survey Submittals  
**Cc:** Michelle Lee; Benzie, Richard (DEQ)  
**Subject:** Flint Needs

Attached is a letter from the city of Flint that states their support and intent on proceeding with the Karegnondi Water Authority (KWA) project. The city is continues to investigate several options within the overall project to determine the volume of KWA water that they will ultimately purchase. In most recent discussions with the city, they are considering to have the ability to purchase between 20 and 25 MGD of water from the KWA.

If you have any further questions or need any additional information; please don't hesitate to call me or send me an e-mail.  
Michael Prysby, P.E.  
Acting District Supervisor  
RMD, MDEQ  
517 335-6122

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, July 11, 2012 1:29 PM  
**To:** Berndt, Jason (DEQ)  
**Subject:** FW: IUP DW - Questions  
**Attachments:** Draft FY13 DW IUP pkg to EPA.pdf

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**From:** Monosmith, Carrie (DEQ)  
**Sent:** Wednesday, July 11, 2012 11:45 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** FW: IUP DW - Questions

Richard, Please complete, or ask Jason to complete a paragraph or so for the Wellhead Protection Workplan that states how municipalities are selected for the grant and how the funds are distributed among them. You can send it to me and I'll forward it to Laura, the sooner it can be done, the better.

These items should be in the procedure we discussed developing. Has anything progressed on the drafting the procedure yet?

*Carrie Monosmith*  
*517-241-2853*

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**From:** Butler, Sonya (DEQ)  
**Sent:** Wednesday, July 11, 2012 11:36 AM  
**To:** 'Laura Cossa'; Monosmith, Carrie (DEQ)  
**Subject:** RE: IUP DW - Questions

Laura, I've attached the FY13 draft DW IUP (it includes details of how we will spend the 2012 cap grant). The answers to your questions from the current year IUP are noted below.

Carrie, please address Laura's question about the wellhead protection work plan. Thanks

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**From:** Laura Cossa [<mailto:Cossa.Laura@epamail.epa.gov>]  
**Sent:** Friday, July 06, 2012 5:34 PM  
**To:** Butler, Sonya (DEQ)  
**Subject:** IUP DW - Questions

Hi Sonya,  
I remember us having a discussion about the 2012 IUPs, but I don't think these topics came up - I am reviewing the IUP as part of the cap grant application, and I have the following questions:

- only Flint project qualified for disadvantaged community assistance (\$13,870,000), but max amount allowed by the 2012 cap grant is 8,178,900. Are you planning to use PF for the difference, or other grants? This project decided last month not to move forward. If it had, our intent was to provide the PF amounts from the 2010 & 2011 cap grants to the project.



- According to the 2012 guidance, Additional Subsidy should be between \$5,452,600 and \$8,178,900. How much will it be? (is not clear from the IUP because there are several years mixed together). Also, what is the status of the 2010 and 2011 add sub? As of yesterday (I just completed data entry in PBR & CBR for FFATA), 2010 PF allocated is \$9,002,758. 2011 PF allocated is \$0.

Finally, one requirement for the IUP that is related to local assistance set asides (Wellhead Protection), states that IUP must include, at minimum, the process by which recipients will be selected and how funds will be distributed among them (40 CFR 35.555(c)(6)(ii)). I don't see this in the IUP, but can you please, send me that info, or can include it in the Wellhead Protection Workplan? Carrie will need to address this.

With this, I think I am done with DW 2012. I will move it through signature chain for approval next week. I also plan to send the 2007 and 2008 transfers for approval next week. I did not get the approval yet from the Grants Office to start the CW 2012, but that is much easier, I need only 2 days to send it in the signature chain - next week, as well.

Thank you.

Laura

**State of Michigan**  
Rick Snyder, Governor

**Department of Environmental Quality**

**Dan Wyant, Director**

INTERNET: <http://www.michigan.gov/drinkingwaterrevolvingfund>

**Drinking Water Revolving Fund  
Draft Intended Use Plan  
Fiscal Year 2013**

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**Prepared by:  
Revolving Loan Section  
Resource Management Division  
July 2012**

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DWRF Draft Project Priority List (PPL) for Fiscal Year (FY) 2013

DWRF Draft Green Project Reserve List for FY 2013

DWRF Draft PPL Future Projects for FY 2013

DWRF Draft PPL Scoring for FY 2013

Category Costs for FY 2013 Draft PPL

Re-Evaluation Form

## **I. INTRODUCTION**

The Michigan Department of Environmental Quality (DEQ) through the Resource Management Division (RMD) administers the Drinking Water Revolving Fund (DWRF). The DWRF program details are set forth in Part 54, Safe Drinking Water Assistance, MCL 324.5401-324.5421, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). In addition, the Michigan Finance Authority (Authority) is charged with administering DWRF funds through the Shared Credit Rating Act, 1985 PA 227, as amended (Act 227).

The DWRF provides reduced interest rate loan financing to qualified water suppliers to finance construction of public water systems. Projects may include new wells, new water treatment plants, storage facilities, upgrades or expansions to existing facilities, transmission lines, pumping facilities, and other related waterworks system improvements. Suppliers must meet federal and state program requirements, as well as demonstrate their ability to publicly finance their project and retire project debt. In addition to the loan provided by the DEQ, suppliers also have the option to pay for part of their project with cash and other resources. Since 1998, Michigan has awarded \$696 million in financial assistance to over 241 borrowers. In fiscal year (FY) 2013, the DWRF will fund \$40 million worth of projects.

This draft Intended Use Plan (IUP) describes how the DEQ and the Authority will jointly administer all available DWRF funds during FY2013. An IUP is a required part of the process to request the federal FY 2012 capitalization grant, which will be matched with 20 percent in state match funds. The FY 2012 capitalization grant allotment for Michigan is \$27,263,000. The Revolving Loan Section (RLS) of the RMD is charged with carrying out the program administration responsibilities. The Drinking Water and Environmental Health Section (DWEHS) and the Field Operations Section of the RMD will assess project priority, issue the necessary construction permits, and offer technical review and assistance throughout project planning, design, and construction. Financial administration of the program will be handled by the staff of the Authority.

The U.S. Environmental Protection Agency (EPA) Region 5 staff will offer guidance and conduct annual program oversight reviews of the DWRF. The EPA serves as a helpful partner in creating and maintaining this program.

The relationship between the DEQ, the Authority, and the EPA is established in an Operating Agreement signed by authorized signatories from each agency. The Operating Agreement is incorporated into this IUP by reference and is available from the DEQ upon request.

This draft IUP includes detail on specific project funding and identifies amounts to be set aside from federal capitalization grants for other uses authorized under the federal Safe Drinking Water Act (SDWA) and Part 54 of Act 451. A public hearing for the IUP and the Project Priority List (PPL) will be held on August 22, 2012, at 1:30 p.m., in the Con Con A&B Rooms, in the Atrium (lower level – South Tower) of Constitution Hall, 525 West Allegan, Lansing, Michigan.

The DEQ certifies that it is recognized by the EPA as the primary agency for management of the drinking water program. The priority system was developed by the DEQ and will be used each fiscal year to determine which projects will have access to DWRF assistance.

The priority system is designed to provide low-interest financing to those projects that will have the greatest impact in facilitating safe drinking water supplies.

### **American Recovery and Reinvestment Act**

In FY2009, Michigan received additional capitalization of \$67,454,000 through the American Recovery and Reinvestment Act of 2009 (ARRA), the federal stimulus bill. Twenty-eight projects received low-cost financing through ARRA. Twelve projects have completed construction as of June 4, 2012.

### **Fiscal Year 2013 Project Funding**

Michigan's FY 2012 federal capitalization grant is \$27,263,000. Congress mandated that at least 20 percent of this amount (\$5,452,600) be provided as additional subsidy to borrowers. The DEQ plans to provide the entire amount as principal forgiveness. All DWRf projects funded in FY 2013 must pay their workers the federal Davis Bacon wage rates for their job classification.

## **II. STRUCTURE OF THE DWRf**

In FY 2013, the DEQ will continue with a direct loan structure. In a direct loan structure, federal funds and state match, or fund assets that have 'revolved' back into the fund, are paid directly to municipal borrowers.

For borrowers who are non-municipal entities, limitations on private activity from tax-exempt issues would require the DEQ and the Authority to fund private water suppliers from funds other than tax-exempt revenue bonds. These loans will be made as direct loans with a letter of credit supplied by the private borrower or through a partnership with a private lending institution with the state providing an insurance annuity. There are no private water suppliers on the FY 2013 draft PPL.

There is a provision for subordinate investment of funds between the DWRf and the SRF. This concept permits the administrators of the two funds to make temporary investments from one fund or the other in the event that monies are needed to service debt on the state's tax-exempt bond issues, cover deficiencies in a fund's reserve accounts, or satisfy other reserve account requirements. Only those funds periodically released from debt service reserve accounts, supplemental reserve accounts, revenue accounts, or any other account of the fund, wherein released monies may be generated, may be used for the purposes of subordinate investment.

At each point that monies are released, the DEQ and the Authority will undertake a "snapshot" look at both the SRF and the DWRf. For each fund, we will first examine whether we need to service debt or satisfy reserve account requirements within the fund from which the released monies originated. Next, we will examine the other fund for the same conditions. Then, if sufficient monies are available to satisfy requirements for each fund, the released money will pass completely through and become available for future commitments to new projects consistent with its source. This provision will not be exercised in FY 2013.

Set-asides in the DWRf are derived from the capitalization grant awarded to the state by the EPA. Set-asides are designated for specified uses within the DWRf to address areas of concern included in the reauthorization of the SDWA. Legal provisions included in Act 227, permit the Authority and the DEQ to establish accounts and sub-accounts to track

revenues and expenditures for the set-asides. The set-asides for program and other activities will be directly administered by the DWEHS. DWEHS staff will also be responsible for the technical assistance activities, except for those funds made available to subsidize loans to disadvantaged communities. The disadvantaged community loans will be managed by the RLS.

The following is a list of potential set-asides identified in Section 1452 of the federal SDWA. The percentages noted would affect the federal capitalization grant.

**DWRF Administration - 4 percent**

**Technical Assistance - 2 percent**

**Program Set-asides - 10 percent**

- Public Water System Supervision
- Source Water Protection
- Capacity Development
- Operator Certification

**Other Activities - 15 percent, not to exceed 10 percent for any one activity**

- Loans for Source Water Protection
- Assistance for Capacity Development
- Implement Wellhead Protection

It is imperative to note that the program set-asides also require a one-for-one state match, in addition to the regular 20-percent state match calculated on the entire amount of the federal capitalization grant. Thus, money diverted to these set-asides will demand an additional investment of state or local funds.

**III. ADVANTAGES OF THE DWRF**

The primary advantage for Michigan water suppliers will be their ability to borrow funds at interest rates below market. The DWRF interest rate is established prior to each new fiscal year. As identified in Part 54 of Act 451, determination of the interest rates is based on loan demand, market conditions, program costs, and future needs.

In setting the interest rates for FY 2013, the DEQ will examine a widely used market index for general obligation municipal bonds to identify current market conditions existing at the time the final IUP is prepared. Then, to establish a rate of interest for municipal borrowers, the DEQ will consider present and future demand for DWRF assistance and the costs to comply with program requirements.

Once the interest rate is determined for municipal borrowers, the resulting interest subsidy to municipalities would be used for private borrowers. If a private borrower chose to obtain a letter of credit and receives a direct DWRF loan from the Authority, the interest rate would be determined by using the U.S. T-bill rate as the base and applying an identical percentage reduction of interest as municipalities receive. For those private borrowers who chose to obtain financing through a financial institution, the interest rate would be the lending institution's rate, reduced by an identical percentage as a municipality would receive.

The interest rate for municipal borrowers in FY 2013 has not yet been established by the DEQ Director, but will be announced at the public hearing. Private borrowers would receive an interest rate subsidy that equates to the same subsidy received by municipal borrowers.

Apart from the low-interest rate, suppliers also benefit from the DWRF in that they can finance all eligible waterworks system costs. The major benefit results from the fact that water supply financing in the past has always been left to the local units of government or private entities. Historically, there has been no significant state financial assistance available to local officials in meeting water supply needs. The DWRF provides an ongoing source of funding to maintain or improve drinking water quality and public health.

#### IV. **GOALS**

Michigan's DWRF establishes a funding source designed to protect and preserve public health within the state's boundaries. Michigan's geographical identity as a "Great Lakes" state affords its citizens with an abundant and high quality water resource from which to draw its drinking water. Unlike many states, Michigan water supplies are plentiful and periods of restricted use are few in most communities. The great challenge for water suppliers lies in protecting the high quality of the resource, as well as ensuring that adequate volume and pressure exist to deliver potable water to the customer.

To this end, Michigan's DWRF has the following long-term goals:

**Goal:** *To provide low-cost financing for waterworks system improvements or upgrades while maintaining the perpetuity of the DWRF.*

The MFA uses a financial advisor to guide decisions on funding levels, interest rates, and other financing terms. Michigan looks to balance the goals of meeting the capitalization grant requirements (i.e., additional subsidies, green projects, Davis Bacon) while maintaining the DWRF in perpetuity.

**Goal:** *To continue effective partnerships with other federal and state financing sources to promote efficiency in environmental review procedures and coordination of funding.*

Given the limitations on pooled capital, the DEQ continues to work together with various federal and state agencies, such as the U.S. Department of Agriculture - Rural Development, Rural Community Assistance Program and the Michigan Department of Licensing and Regulatory Affairs, so that we may collectively fund qualifying projects and maximize use of our capital pool to achieve stated goals. Such partnerships ultimately benefit everyone. Industry, tourism, and day-to-day quality of life are strengthened when our most valuable natural asset is preserved and made available for use and enjoyment.

**Goal:** *To maintain statewide compliance with all applicable state and federal drinking water laws, rules, and standards while protecting the public health and environmental quality of our state.*

The DEQ will use DWRF set-aside funding to: maintain source water assessment, wellhead protection, and source water protection programs; assist small, economically disadvantaged communities in meeting drinking water standards; apply a capacity assessment program for all new and existing community and non-transient non-community water supplies; and continue operator certification program requirements to assure proper operation and maintenance of public water systems.

**Goal:** *To continue use of the DWRF program*

The DEQ will continue to use effective outreach methods such as: direct mail, electronic media, newsletter publication, and informational meetings to publicize and encourage the use.

In order to accomplish the long-term goals, we must also focus on more immediate objectives. Therefore, our short-term goals in FY 2013 are:

**Goal:** *Secure Michigan's full share of federal funding and to expeditiously obligate these monies, along with the state contribution.*

The DEQ has prepared and identified on the FY 2013 draft PPL all projects that are willing and able to progress to loan closing consistent with a project milestone schedule for the construction of eligible facilities. All projects receiving DWRF funds in FY 2013 will issue a Notice to Proceed within 60 days of the loan closing.

**Goal:** *Ensure that the additional requirements of the 2010, 2011, and 2012 capitalization grants are met, including those that are imposed on local borrowers.*

Congress has directed that at least 20 percent of the capitalization grant be allocated towards Green Project Reserve for the 2010 and 2011 capitalization grants. The 2012 capitalization grant did not have a Green Project Reserve requirement. The DEQ solicited green infrastructure, water/energy efficient and environmentally innovative projects for the FY 2013 PPL. The DEQ required and approved business cases for projects that are not determined as a categorically Green Project as described in the EPA's FY 2011 DWRF Procedures. Business cases will be posted on the DEQ website once funded.

Congress mandated that at least 30 percent of the 2011 capitalization grant and at least 20 percent of the 2012 capitalization grant be provided as additional subsidy to borrowers. The DEQ plans to provide the additional subsidy as principal forgiveness. Congress also requires all DWRF projects funded in FY 2013 to pay their workers the federal Davis Bacon wage rates for their job classification.

**Goal:** *Review and update, as applicable, the Operating Agreement by December 31, 2012.*

The DWRF program has acquired additional requirements since ARRA; however, the Operating Agreement has not been updated to reflect the new requirements. The goal for the completion of the updates is December 31, 2012.

**VI. ALLOCATION OF FUNDS**

The establishment of a fundable range for any given fiscal year entails a series of steps that culminate in a determination of how much fund resources could support. Using a series of assumptions (DWRF loan rate, return on investment rates, and level of capitalization) the process for FY 2013 is outlined below:

1. The DEQ reviewed the total amount of loans committed through June 30, 2012, and the anticipated loan commitments through September 30, 2012.

Total loan commitments through 6/30/2012	\$696,255,000
Plus anticipated FY 2012 loan awards through 9/30/2012	\$19,525,000
Remaining ARRA amount to be drawn via projects (as of 6/29/2012)	\$639,890



2. The DEQ assumed that the new federal capitalization grant and the appropriated state match would remain constant until 2013 (for planning purposes only). However, it should be noted that the DEQ has **no assurance** of state general fund monies to match federal funds beyond the 2012 capitalization grant. Since the 2008 capitalization grant, no general fund has been provided for match of the grant. State match revenue bonds were used to provide the match needed to capture the capitalization grant. State general fund monies, \$5 million, were appropriated for use in FY 2013. Michigan was appropriated \$27,263,000 in DWRf federal capitalization grant funds for calendar year 2012.

2010 cap. grant for loans (total grant is \$41,226,000)	\$35,302,440
2010 state match	\$ 8,245,200
2011 cap. grant for loans (total grant is \$28,152,000)	\$23,062,880
2011 state match	\$5,630,400
2012 cap. grant for loans (total grant is \$27,263,000)	\$22,252,220
2012 state match	\$5,452,600

3. After subtracting the amount needed to service existing loans, with continuation of a direct loan structure, fund resources could support 40 million in new binding loan commitments in FY 2013. A direct loan structure will result in higher lending capacities in out years and maximize the fund's ability to compensate for the loss of state match funds that have resulted from general fund budget cuts in recent years.

The provision of additional subsidy is a requirement of the 2010, 2011 and 2012 capitalization grants. The additional subsidy will be in the form of principal forgiveness and will not exceed \$15,770,955 in FY 2013. (The amount available for principal forgiveness includes approximately \$2 million of the 2010 capitalization grant, \$8 million of the 2011 capitalization grant, and \$5 million of the 2012 capitalization grant that may not be allocated in FY 2012. However, the total amount of principal forgiveness is contingent upon as bid amounts of FY 2012 4<sup>th</sup> Quarter projects.) When principal forgiveness is provided from available loan proceeds to projects, it greatly reduces the amount of the assets returning to the DWRf as loan repayments, which could be used to make future loans.

Principal forgiveness will be made available for green projects expected to close on a loan in FY 2013. Principal forgiveness will be provided at 100 percent of the green project/ component amount (up to a \$6-million limit per project). The DEQ reserves the option to limit projects to the PPL binding commitment amount.

Each state may transfer 33 percent of available funds between the SRF and the DWRf programs. This may occur starting one year after a state receives its first capitalization grant for project funds. At this time, Michigan does not propose to transfer funds between the SRF and DWRf programs.

## **VII. CRITERIA AND METHOD FOR DISTRIBUTION OF FUNDS - SET-ASIDES**

The DEQ has established the set-asides based on what it needs to effectively administer the program(s) and what it can utilize within the fiscal year. The split of monies is structured to meet not only expected needs (e.g., 4 percent for administration), but also to target programs that can help suppliers prepare themselves to qualify for DWRf loans (e.g., technical assistance funds used to defray planning costs).

## **Administration**

Up to 4 percent of the federal capitalization grant can be used to administer the fund. Michigan intends to utilize the full 4 percent, which is \$1,090,520. Any funds not utilized in FY 2013 will be retained on account for administration costs in future years.

## **Technical Assistance**

The Technical Assistance Program for FY 2013 will use 2 percent of the federal grant award or approximately \$545,260 of the expected FY 2012 federal grant. Approximately \$875,000 (using the FY 2012 and remaining funds from prior grants) will be used to support 7 full time employees (FTEs) from the total balance in this set-aside in FY 2013. One-half (0.5) of an FTE will conduct the Abandoned Well Management Program; 0.5 of an FTE will administer the Wellogic data system; 0.5 of an FTE will perform technical assistance outreach on the Well Construction Program; 0.75 of an FTE will provide direct assistance to non-community water supplies (NCWS) that rely on treatment to be in compliance; 2.0 FTEs will provide technical assistance to operators of NCWS to improve compliance rates; and 1.5 FTEs will work on the transition from the NCWS database currently in use, WaterTrack to SDWIS, a project expected to take several years to complete. The remaining 1.25 FTEs will work on activities related to the Small Systems Initiative, in conjunction with the EPA.

**Abandoned Well Management (AWM)** – The DEQ will continue to use funds from this set-aside to administer and conduct a statewide, comprehensive AWM Program. There are three components to the AWM Program: training of well drilling contractors and local health department (LHD) staff, development of public education materials, and enforcement of abandoned well plugging regulations. Training and consultant services are provided to 44 LHDs who implement the AWM Program in the field. In addition, the DEQ provides direct enforcement assistance and provides public education materials to community public water suppliers for distribution.

**Wellogic Data System** – The DEQ will utilize funds from this set-aside to administer the Wellogic online water well data system. Activities performed by staff include development of new applications, maintenance of existing data system structures, and training of system users. The Wellogic system captures water well construction and geological data at the time of new water well construction and when abandoned wells are being plugged. Wellogic provides for better oversight of public water supplies and water well drillers. Without Wellogic, the DEQ would not have been able to develop the Michigan Groundwater Management (MGMT) model that is used to delineate wellhead protection areas. Wellogic is also an important component of the model used to determine the effects of proposed groundwater water withdrawals under the Great Lakes St. Lawrence Seaway Water Resources Compact.

**Well Construction Technical Assistance and Outreach** – In FY 2013, the DEQ will continue to provide training, assistance, and outreach on proper water well construction techniques, per Michigan's Well Construction Code. Activities will focus on training water well drillers, LHD personnel, and DEQ staff on the importance of constructing water wells that meet code requirements and the risk

that a poorly constructed well has to contaminate groundwater or threaten public health. Field demonstrations of well drilling techniques, done in conjunction with experienced, reputable water well drillers will be done. Finally, the DEQ anticipates that in FY 2013, work will begin to revise the Well Construction Code. The 0.5 FTE funded by this set-aside will serve a key role by educating stakeholders on the public health benefits of sound water well construction principles, in support of the revision efforts.

**Small Systems Treatment** – The DEQ will utilize funds from this set-aside for engineering plan review, permitting, and consultation associated with the operation of treatment systems at non-transient non-community public water systems. This FTE will also provide direct assistance to small public water systems that employ treatment to comply with drinking water standards, especially those standards promulgated in the last few years.

**Non-community Systems Compliance Assistance** – The DEQ will utilize funds from this set-aside to provide technical assistance to both the operators of non-community water supply systems and to Michigan's LHD staff that are contracted by the DEQ to implement the non-community compliance oversight program in Michigan. Approximately 1.0 FTE of effort will be expended exploring ways to increase capacity development work at small public water systems; at both small, privately owned community water supplies and at non-community water supplies. Efforts will be coordinated with Michigan's LHDs and also with RMD's Revolving Loan Section staff that have been performing asset management evaluations at community water systems for several years now. From these initial efforts, the DEQ hopes to develop a less complex tool for small systems to use to improve their capacity development efforts.

**Non-community Water Supply (NCWS) Programming Updates** – Approximately \$12,000 from this set-aside will be used to develop and host a 2-day training for LHD staff contracted to complete NCWS program services required under the SDWA. Topics discussed will include refreshers on the requirements of the Groundwater Rule and the Lead and Copper Rule. In addition, aspects of the Revised Total Coliform Rule, which is slated to become final within the next year, will be discussed. Some of the presentations at this training will be done by EPA Region 5 Water Division staff.

**Non-community Water Supply (NCWS) Database Transition Work** – During FY 2013, the DEQ will continue to prepare for a transition from WaterTrack, the system currently used to hold all non-community water supply compliance data, to SDWIS/Next Gen. DEQ will utilize 1.5 FTEs funded by this set-aside to work on the activities related to this transition. In addition, in FY 2013, the DEQ may need to utilize funds in this set-aside for work needed to initiate the move from WaterTrack to SDWIS. The amount that might be needed in FY 2013 is unknown at this time, but the total cost of any preparatory work would not exceed \$100,000 without a modification to the Technical Assistance Set Aside Workplan with EPA.

**Small Systems Initiative Work** – The Small Systems Initiative is a special project being done in conjunction with EPA Region 5 staff and focuses on improving and maintaining compliance with the SDWA at NCWS schools and daycares. Aspects of this work will include developing an inventory of the certified operators at the schools and daycares within the Initiative's target areas; developing and delivering training specifically created for the operators; drafting and publishing educational materials and newsletters for the managers and operators of the schools and daycares; and coordinating Initiative work with the LHDs involved in the effort.

**Small and Disadvantaged Community Planning Assistance** – The DEQ will use available funds from this set-aside to pay for project planning costs for disadvantaged communities with less than 10,000 people who apply for DWRF assistance. Available funds will be used to provide direct financial planning assistance to certain small community water systems wishing to make improvements.

#### **Program Set-Asides - \$ 2,450,000**

The DEQ intends to continue four programs in FY 2013 using program set-asides. The additional required matching funds will be provided through the Public Water System Supervision Program from the state general fund and restricted fund (fee) revenue, plus the perpetual match from the FY 1993 Public Water System Supervision matching money. The following is a breakdown of the \$2,450,000 projected amount:

**Capacity Development** – State staff, augmented by contracts for services with LHDs, are being used to implement the program based upon EPA guidance and DEQ policies for new systems. The 1998 amendments to the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), provided authorization to conduct the program. The amendments allow the DEQ to apply capacity assessment criteria to new community and non-transient non-community public water supplies, to DWRF applicants, and existing systems selected under a state strategy. The DEQ developed guidance for these efforts using stakeholders for public participation. Capacity development activities are inherent in the job functions of staff implementing the Public Water System Supervision Program, and we will continue to support these activities in FY 2013 to the extent necessary to meet current workload and maintain current level of effort.

To conduct financial capacity assessments of new community systems, DEQ staff review financial information submitted by proposed systems. Approval must be granted before these systems commence operation. The LHDs also conduct capacity assessments of new, non-transient non-community systems and are reimbursed for this activity. In recent years, the amount expended on conducting capacity-related assessments for new systems has decreased from previous years due to the downturn in the economy. This is expected to continue in FY 2013 unless the state's economy improves.

The DEQ will also continue to provide education and outreach efforts in FY 2013 by cosponsoring a newsletter delivered four times a year to all community public water systems. The newsletter promotes better operation and maintenance practices and provides regulatory guidance.

The DEQ proposes to utilize \$450,000 (all federal funds) for the above activities.

**Source Water Protection** – The total projected amount for this activity is \$750,000 (all federal funds). The DEQ proposes to utilize 5.5 FTEs funded through this set-aside that would be split between several activities: the Surface-Source Water Protection Program, the Well Construction Regulation Program, and the On-Site Wastewater Program.

Source Water Protection - Surface Water Intake Program

The DEQ will utilize 0.25 FTE funded through this set-aside to implement the Surface Water Intake Protection Program. There are 70 communities in Michigan that use surface water as their drinking water source. The funding allows the DEQ to facilitate implementation of surface water-related source water protection activities in these communities.

Well Construction Regulation Program

The DEQ will utilize 0.5 FTE funded through this set-aside to conduct the Well Construction Regulation Program. This program serves to protect public and private drinking water source aquifers by proactively administering proper well construction practices. This program provides the first line of defense for Michigan's groundwater source drinking water supplies by preventing contaminant entry into well intakes and protecting aquifers through field implementation of protective well drilling and decommissioning practices. The program provides training, enforcement assistance, and field consultation services to 44 LHDs, as well as training and field consultation to well installation and plugging contractors.

On-Site Wastewater Program

The DEQ will fund 4.75 FTEs from this set-aside to conduct the On-Site Wastewater Program. This program serves to protect public health and the groundwaters of the state used for drinking water by assuring proper treatment of effluent from individual residential and collective residential wastewater treatment and disposal systems where the wastewater effluent is discharged to the ground and ultimately making its way to the groundwaters of the state. The DEQ provides assistance in administration of this program to staff at 44 LHDs under contract to assure that on-site systems are designed and operated so that effluent wastes will receive the maximum natural attenuation of microbial agents, nutrients, and other contaminants before the effluent enters the groundwater. In addition to this core activity, the DEQ would also continue to provide the following oversight activities:

- Accreditation of LHD on-site wastewater programs conducted on a 3-year cycle to assure compliance with DEQ minimum program requirements.
- Administration of current DEQ statewide program that regulates on-site systems with flows less than 10,000 gallons conducted by authorized LHDs.
- Administration of the current statewide review and approval process for subdivisions and condominiums that rely on individual on-site wastewater systems.
- Training of and consultation with LHD staff.

**Operator Certification** – The Operator Training and Certification Unit (OTCU) continues to administer the program through expansion and improvement to the existing Waterworks Operator Certification Program. The EPA approved the Operator Certification Program in July 2001 and has annually certified continued compliance with the requirements of the Federal Operator Certification Guidelines. Based upon the activities required for continued program approval, the DEQ has estimated the costs to expand/revise and continue the program. Operator training is also included with this program.

The DEQ intends to fund 5 FTEs from this set-aside to implement all aspects of the drinking water operator training and certification programs at an estimated total cost of \$625,000. An additional amount of \$25,000 will be used for waterworks operator training and certification materials, public participation, and exam validation. Much of this work entails upgrading and expanding data systems to improve certification and training record management. The DEQ also intends to expand the continuing education program for certified operators of non-transient non-community water supplies. Courses will be developed that are geared toward operators serving a population of 3,300 or fewer.

**Public Water System Supervision** – The DEQ proposes to use \$600,000 (all federal funds) in FY 2013 to support existing staff and the existing scope of the Public Water System Supervision Program. No additional staff are proposed; however, this funding will allow for additional management flexibility to address priority work efforts, including the highest priority activities associated with new drinking water regulations.

#### **Wellhead Protection (Section 1452(k)) - \$925,000**

In FY 2013, the DEQ will use \$925,000 from the Wellhead Protection set-aside. Approximately \$375,000 of this amount will support wellhead protection program work done by 3 FTEs. The program emphasis is on the delineation of wellhead protection areas, the approval of local wellhead protection programs and local program implementation. The DEQ has authorization under Act 399 to implement a wellhead protection matching grant program to enhance the existing voluntary state program. A stakeholder process was used to develop and promulgate administrative rules for the grant program. The DEQ is proposing to utilize approximately \$325,000 in FY 2013 for the grant program. The grant program requires a 50/50 match of state and local funds and provides incentives to local governments to increase source water protection efforts and initiatives.

The following table depicts the history of wellhead protection grants in Michigan:

<b>Fiscal Year</b>	<b>Number of Communities</b>	<b>Grant Dollars Awarded</b>
1999	54	\$1,014,044
2000	62	\$1,080,390
2001	66	\$1,044,266
2002	85	\$1,286,589
2003	84	\$1,260,180
2004	67	\$ 857,772
2005	57	\$ 848,143
2006	50	\$ 682,029
2007	43	\$ 677,629
2008	43	\$ 699,247
2010	43	\$ 642,967
2011	27	\$ 298,600
2012	37	\$ 311,804

Note: No grants were awarded in 2009 because of spending restrictions ordered by Michigan's Governor.

Several years ago, DEQ staff began working with Michigan State University's (MSU) Laboratory of Excellence for Real-Time Computing and Multi-Scale Modeling. The goal of this effort was to develop a software package capable of delineating wellhead protection areas using existing data compiled by the DEQ. In the spring of 2011, the software became a reality with the development of the Michigan Groundwater Management Tool (MGMT). MGMT uses existing data sources, such as the Wellogis and Groundwater Inventory and Map databases, to provide "automated" wellhead protection area delineations. With its development, DEQ staff intends to provide wellhead protection area delineations for all community and non-transient non-community public water supplies throughout Michigan. Because this is being done using the MGMT software, the cost will be minimal.

In the fall of 2011, DEQ staff and the MSU Remote Sensing and Geographic Information Systems group partnered to host two outreach meetings on the MGMT software in the Kalamazoo and Grand Rapids districts. Attendees of the meeting were given a copy of the source water assessment and wellhead protection area delineation for their public water supply system. Attendees were then provided training on the meaning of the source water assessment and how the wellhead protection area delineation could be used to improve upon the source water assessment. Instruction was also provided on the steps that might be taken to better protect the source water for their public water supply system. Evaluations of the meetings by participants were overwhelmingly positive.

Although the MGMT software package is nearly complete, some additional database modifications and software enhancements are needed to accommodate the delineation of wellhead protection areas throughout the remainder of the state. There are also plans for another four to six outreach meetings where wellhead protection training will be provided to the owners and operators of community and non-transient non-community public water supplies throughout the remaining areas of Michigan. For these items, the DEQ expects to spend approximately \$250,000 from the set-aside in FY 2013.

## **VIII. CRITERIA AND METHOD FOR DISTRIBUTION OF FUNDS - PROJECT LOANS**

Michigan's DWRP will commit loans for qualified projects based on project plans that were submitted to the RLS by May 1, 2012. Plans were reviewed by staff of the DEQ to ensure compliance with Section 5405 of Act 451, before being placed on the draft PPL for FY 2013. The DWRP, to the maximum extent practicable, must give priority to projects that:

- address the most serious risks to human health,
- are necessary to ensure compliance with the requirements of the federal SDWA,
- in addition, assist systems most in need according to the state's affordability requirements.

Michigan's priority system takes these factors into account in the assignment of priority points. Acute violations receive a larger number of points than any other category. In fact, standard compliance offers over 41 percent of a project's total possible points. All factors point to the need for the project to comply with federal drinking water requirements; affordability is addressed by the award of additional points for disadvantaged community status, and is the ultimate tiebreaker. Michigan's priority point system is detailed in Section 5406 of Act 451.

The FY 2013 DWRP draft PPL is included as part of the IUP and will be presented as part of the public hearing. The DWRP draft PPL has 52 projects totaling \$267 million. This includes 22 projects and/or segments equaling \$97 million for funding in the future. Since the draft PPL must be produced prior to the date on which binding commitments will be offered for 4<sup>th</sup> Quarter FY 2012 projects, these projects are retained on the list for FY 2013 in the event that a binding commitment is not offered on August 29, 2012. There are four 4<sup>th</sup> Quarter FY 2012 projects on the draft PPL totaling \$8 million.

Section 1452(a)(2) of the federal SDWA requires the state to first make available 15 percent of all funds annually credited to the DWRP for financial assistance to water suppliers serving fewer than 10,000 persons. For the 2012 capitalization grant, Michigan must reach or exceed \$4,089,450 to satisfy this requirement.

All projects are reviewed and scored based upon the priority point system outlined in Part 54 of Act 451. Funds are made available for commitment based on the priority ranking and projects will only be funded out of order to satisfy requirements for small community assistance. Thus, only projects on the PPL are funded in priority order.

Employing the criteria found in Section 5415 of Act 451, the Director of the DEQ will set the interest rate prior to the public hearing for FY 2013. The term of the loan will run up to 20 years for most projects. Those suppliers meeting disadvantaged community criteria will, however, be able to extend their terms for up to 30 years, if desired.

Part 54 of Act 451 also permits suppliers serving less than 10,000 persons to receive reimbursement of project planning costs upon delivery of an approvable project plan to the DEQ. Legislation has been passed to provide a funding mechanism for this reimbursement. Interim planning loans first became an option for DWRP applicants in FY 2001.



## **IX. PROGRAM CHANGE**

Beginning October 1, 2009, the DEQ implemented the EPA's new Disadvantaged Business Enterprise (DBE) Rule (40 CFR Part 33). The DBE rule applies specifically to ANY procurement made utilizing EPA financial assistance. EPA financial assistance includes DWRF funding. The new DBE rule changed substantially from the prior Minority Business Enterprise (MBE) and Women's Business Enterprises (WBE) rule. The DBE rule requires that MBE and WBE firms be certified. Certification applies to enterprises that are at least 51-percent owned and/or controlled by socially and economically disadvantaged individuals who are of good character, are citizens of the United States, and have an initial and continued personal net worth of less than \$750,000.

DBE requirements apply to the DEQ, DWRF loan recipients, and the loan recipient's prime contractors. Additional information regarding the DBE requirements is available on the DEQ, DWRF website ([www.michigan.gov/drinkingwaterrevolvingfund](http://www.michigan.gov/drinkingwaterrevolvingfund)).

## **X. DISADVANTAGED COMMUNITY STATUS**

Disadvantaged community status is determined by the DEQ based on information submitted with a supplier's project plan. To qualify, an applicant must first meet the definition of "municipality" found in Part 54 of Act 451. Next, the updated median annual household income (MAHI) of the area to be served must be less than 120 percent of the state's updated MAHI. Finally, the costs of the project must be borne by the customers in the service area. If costs are spread over a larger area, then that area must demonstrate that it meets the poverty or affordability criteria.

Once these conditions are met, a community will be awarded the disadvantaged community status if one of the following is true:

- More than 50 percent of the area to be served by the proposed project is identified as a poverty area by the U.S. Census Bureau.
- The updated MAHI of the area to be served is less than the most recently published federal poverty guidelines for a family of four in the contiguous United States.
- The updated MAHI is less than the updated statewide MAHI and the annual user costs for water supply exceed 1.5 percent of the service area's MAHI.
- The updated MAHI is more than the updated statewide MAHI and the annual user costs for water supply exceed 3 percent of the service area's MAHI.

The major benefits for qualified communities include 50 additional priority points, extension of loan terms to 30 years, and assistance to help defray the costs of preparing project plans. There is one project, the city of Flint, on the FY 2013 draft PPL that qualifies for disadvantaged community status.

A complete discussion of the disadvantaged community status may be found in a guidance document prepared by the DEQ to more fully explain how a supplier can achieve the status and benefit from it. RLS staff encourages all applicants to supply the pertinent data to allow the DEQ to perform a disadvantaged community status analysis.

## **XI. EPA AUTOMATED CLEARINGHOUSE ACTIVITIES**

The EPA employs an Automated Standard Application for Payments (ASAP) system to make disbursements of federal funds. Michigan will comply with this system's requirements and deposit funds drawn from it into appropriate accounts set up for the DWRP.

Beginning in the 1<sup>st</sup> Quarter of FY 2013, Michigan anticipates drawing capitalization grant funds from the ASAP system.

One request for disbursement may be submitted by the local project's authorized representative (or state agencies) each month. As project costs (or program administrative/set-aside costs) are incurred, the request for disbursement of funds will be sent directly to the DEQ, who will then process the request as part of a weekly draw request. Upon delivery to its office, the Authority will execute the fund drawdown electronically by transferring money from the federal ASAP and state accounts.

Monies will be automatically deposited into the debt service reserve account of the DWRP, while funds are electronically wired to a municipal water supplier's bank from a DWRP account. For non-municipal water suppliers, the funds will be transferred from direct federal and state capitalization amounts established specifically for the purpose of reimbursing their eligible project costs.

## **XII. ASSURANCES**

The final guidelines from the EPA set forth provisions that the state must provide certain assurances in order to qualify for capitalization grant funding. Such assurances are incorporated into the Operating Agreement and are included here by reference.

## **XIII. OUTPUT/OUTCOME MEASURES**

To comply with the EPA requirements on Environmental Benefits of the DWRP, Michigan estimates that the following outputs could result from project loans in FY 2013 (excluding any projects noted as future on the PPL):

- A. Output: Michigan could fund approximately 18 drinking water transmission/distribution loans to construct/rehabilitate/upgrade drinking water transmission and distribution systems across the state. The dollar amounts of these applications total approximately \$81,080,589.

Outcome: The funding of these projects could result in more people receiving improved drinking water from existing treatment systems in Michigan.

- B. Output: Michigan could fund approximately three drinking water treatment projects to construct and/or rehabilitate drinking water treatment facilities across the state. The dollar amounts of these applications total approximately \$41,187,500.

Outcome: The funding of these projects could result in improved drinking water for thousands of people in Michigan and, upon completion of the projects, facilities that meet all applicable permits and SDWA requirements.

- C. Output: Michigan could fund approximately four drinking water storage projects to construct and/or rehabilitate drinking water storage facilities across the state. The dollar amounts of these applications total approximately \$10,432,271.

Outcome: The funding of these projects could result in improved drinking water and storage facilities that meet all applicable permits and SDWA requirements.

- D. Output: Michigan could fund approximately three drinking water source projects to construct and/or rehabilitate drinking water source facilities across the state. The dollar amounts of these applications total approximately \$3,133,929.

Outcome: The funding of these projects could result in improved drinking water for thousands of people across Michigan.

Please note that the number of applications will not agree with the number of loans on the PPL, as many of the project loans include work in more than one category (i.e., transmission/distribution, treatment, storage, and source).

#### **XIV. PUBLIC REVIEW AND COMMENT**

In order to satisfy public participation requirements, the DEQ will hold a public hearing to discuss the DWRF draft IUP on August 22, 2012, at 1:30 p.m. The location will be the Con Con A & B Conference Rooms in the Atrium (lower level – South Tower) of Constitution Hall, 525 West Allegan, Lansing, Michigan. This hearing will be publicly noticed in the *Detroit Legal News*, the *Lansing State Journal*, and the *Marquette Mining Journal*; posted on the DEQ calendar of events; mailed to all persons and engineering firms on our newsletter mailing list; and individually noticed to each water supplier on the FY 2013 draft PPL. These sources promote the hearing to ensure maximum public input from those interested in the DWRF. The hearing affords stakeholders and other interested parties an opportunity to hear and comment on how the DEQ plans to disburse the DWRF loan funds. All comments will be responded to upon the close of the hearing record.

Questions about the DWRF draft IUP may be directed to:

**Ms. Sonya T. Butler, Chief  
Revolving Loan Section  
Resource Management Division  
Department of Environmental Quality  
P.O. Box 30241  
Lansing, MI 48909-7741  
Voice: 517-373-4737  
E-mail: Butlers2@michigan.gov**

Other contacts for the DWRF are:

**Ms. Carrie Monosmith, Chief**  
**Drinking Water and Environmental Health Section**  
**Resource Management Division**  
**Department of Environmental Quality**  
**P.O. Box 30273**  
**Lansing, MI 48909-7773**  
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**E-mail: [monosmithc@michigan.gov](mailto:monosmithc@michigan.gov)**

**Mr. Joe Fielek, Executive Director**  
**Michigan Finance Authority**  
**Michigan Department of Treasury**  
**Richard H. Austin Building**  
**P.O. Box 15128**  
**Lansing, MI 48922**  
**Voice: 517-241-9504**  
**E-mail: [treasmmba@michigan.gov](mailto:treasmmba@michigan.gov)**

**XV. ORIGINATION OF DOCUMENTS**

The RMD is responsible for issuing the DWRF draft IUP and its accompanying information.

DWRf

# Drinking Water Revolving Fund Current PPL Fiscal Year 2013 Project Priority List - By Rank

DWRf

Project No.	Loanee	Location	Description	Population	Total Points	Binding Commitment Date	Binding Commitment Amount
7362-01	Ann Arbor	Washtenaw Co	Water sys imp (Phase 4)	120,000	800	8/27/2012	6,000,000
7375-01	Ann Arbor	Washtenaw Co	Barton Dam PS Electrical Upgrd	120,000	800	3/11/2013	2,500,000
7380-01	Bay Co- County Road	Bay City	Installation of membrane wtp; trans wm; storage tank,	82,932	625	8/26/2013	12,000,000
7374-01	Grand Rapids	Kent Co	Water sys impr	296,973	615	8/27/2012	5,305,000
7381-01	Grand Rapids	Kent Co	Concrete restoration-floc/sed basin 2, 3 & 4 & NSSWC	296,973	615	11/21/2012	1,160,000
7376-01	Beecher Metropolitan	Genesee Co	WM Repl, Strg	12,793	540	8/26/2013	2,250,000
7314-01	South Lyon	Oakland Co	Repl mains, add. LS pump	11,035	540	8/27/2012	6,260,000
7310-01	Flint	Genesee Co	PS upgrd; trans main repl	118,465	500	8/26/2013	13,870,000
7335-01	Pontiac	Oakland Co	Trans main looping; tank scada; WM repl	67,133	475	8/26/2013	5,455,000
7384-01	YCUA	Washtenaw Co	Fairview Heights--WM looping	72,797	450	3/11/2013	380,000
7385-01	YCUA	Washtenaw Co	Pines Subdivision--WM repl	72,797	450	3/11/2013	1,470,000
7383-01	YCUA	Washtenaw Co	Smokler Textile Subdivision--WM repl	72,797	450	3/11/2013	2,695,000
7377-01	Waterford Twp	Oakland Co	WM Repl/Rehab and Meters	71,707	425	6/3/2013	9,400,000
7299-01	Northville Twp	Wayne Co	Repl mains & booster stn upgrd	26,969	415	8/27/2012	1,960,000
7329-01	Grand Blanc Twp	Genesee Co	Trans WM; Ground Strg Tank	35,015	390	6/3/2013	5,605,000
7303-01	Warren	Macomb Co	Repl mains (Phase 3)	134,457	350	6/3/2013	11,545,000
7281-01	Kentwood	Kent Co	New trans; repl mains; looping	33,900	340	6/3/2013	6,055,000
7344-01	Marysville	St. Clair Co	Intake rehab; WTP sedimentation basins	9,964	330	6/3/2013	3,000,000
7371-01	Port Huron	St Clair Co	Repl mains (Riverside Dr. Ph. 3)	53,072	325	3/11/2013	150,000
7326-01	Dearborn	Wayne Co	Repl mains (Phase 3)	90,107	325	8/26/2013	3,440,000
7175-01	YCUA	Washtenaw Co	Repl mains; looping (Bradley/Snow/I-94)	72,797	325	3/11/2013	4,360,000
7355-01	Livonia	Wayne Co	Phase 1 WM repl; PRV	95,269	325	8/26/2013	7,960,000
7379-01	Marquette	Marquette Co	Storage tank impr	20,457	315	8/26/2013	430,000
7256-01	Redford Twp	Wayne Co	Repl mains/ looping	48,285	315	8/26/2013	4,320,000
7386-01	Menominee	Menominee Co	M-35 WM repl	9,300	305	11/21/2012	1,260,000
7320-01	YCUA	Washtenaw Co	Repl mains (E. Michigan Ave)	72,797	300	3/11/2013	390,000
7382-01	YCUA	Washtenaw Co	Northeast Area Phase 5--WM repl	72,797	300	3/11/2013	615,000
7295-01	Mt Clemens	Macomb Co	New WM	19,605	290	6/3/2013	880,000
7290-01	Wayne	Wayne Co	Upgrd meters w/ cent read sys; repl mains	18,200	215	6/3/2013	4,465,000
29	Total Number of Projects						125,180,000

DWRf

### Drinking Water Revolving Fund Green Projects Fiscal Year 2013 in Project Priority List Order

DWRf

Project No.	Loanee	Location	Project Description	GPR Amount	Binding Commitment Amount	Type of GPR	
						Categorical	Business Case
7362-01	Ann Arbor	Washtenaw Co	Water sys impr	\$ 3,380,000	\$ 8,500,000		X
7380-01	Bay Co	Bay City	Installation of membrane wtp;	\$ 22,000,000	\$ 57,000,000		X
7374-01	Grand Rapids	Kent Co	Water sys impr	\$ 1,724,000	\$ 5,350,000		X
7376-01	Beecher Metropolitan	Genesee Co	WM Repl, Strg	\$ 1,530,000	\$ 2,250,000		X
7314-01	South Lyon	Oakland Co	Repl mains, add. LS pump	\$ 5,780,000	\$ 6,260,000		X
7377-01	Waterford Twp	Oakland Co	WM Repl/Rehab and Meters	\$ 9,400,000	\$ 9,400,000		x
7299-01	Northville Twp	Wayne Co	Repl mains & booster stn upg	\$ 1,595,000	\$ 1,960,000		X
7281-01	Kentwood	Kent Co	New trans; repl mains; looping	\$ 2,830,000	\$ 5,405,000		X
7344-01	Marysville	Marysville	Intake Rehab; WTP Sediment	\$ 1,055,000	\$ 3,000,000		X
7355-01	Livonia	Wayne Co	Phase 1 WM Repl; PRV	\$ 5,930,000	\$ 7,960,000		X
7300-01	Melvindale	Wayne Co	Repl mains/services; looping	\$ 3,600,000	\$ 3,600,000		X
7320-01	YCUA	Washtenaw Co	Repl mains (E. Michigan Ave)	\$ 390,000	\$ 390,000		X
7322-01	YCUA	Washtenaw Co	Repl mains (E. Clark Rd)	\$ 2,330,000	\$ 2,330,000		X
7290-01	Wayne	Wayne Co	Upgrd meters w/ cent read sys	\$ 2,315,000	\$ 4,465,000		X

**14 Projects w/ GPR****\$ 63,859,000 \$ 117,870,000**

DWRF

# Drinking Water Revolving Fund Future Projects Fiscal Year 2013 in Project Priority List Order

DWRF

Project No.	Loanee	Location	Project Description	Total Points	Binding Commitment Date	Binding Commitment Amount
7380-02	Bay Co - County	Bay City	Membrane wtp; trans wm; storage tank--Segment 2	625	Future	45,000,000
7341-01	Genesee Co	Genesee Co	Phase 2 trans mains	725	Future	1,060,000
7328-01	Allegan	Allegan Co	New stg; main repl/looping (future phases)	630	Future	4,200,000
7347-01	Grand Rapids	Kent Co	Water sys impr (future phases)	615	Future	23,625,000
7368-01	Leslie	Ingham Co	Water sys impr (Phase 2)	545	Future	1,510,000
7309-01	Pittsfield Twp	Washtenaw Co	Trans WM	540	Future	3,250,000
7238-01	St Joseph	Berrien Co	WTP upgrade	540	Future	9,970,000
7331-01	Manistee	Manistee Co	Repl/loop mains; well impr; meters (Future phases)	530	Future	1,585,000
7311-01	Flint	Genesee Co	Trans main repl	500	Future	11,695,000
7385-99	YCUA	Washtenaw Co	Future phases (2014-2015)	450	Future	890,000
7271-01	St Joseph	Berrien Co	Repl/loop mains (Upton/Ridgeway); River crossing	440	Future	540,000
7272-01	St Joseph	Berrien Co	Repl/loop mains (Morton/Wolcott/Orchard)	440	Future	3,340,000
7327-01	Dearborn	Wayne Co	Repl mains (Phase 4)	325	Future	3,235,000
7173-01	YCUA	Washtenaw Co	Future Phases	325	Future	2,690,000
7316-01	Macomb Twp	Macomb Co	WM repl	325	Future	3,965,000
7339-01	Wayne Co	Sumpter Twp	WM repl	315	Future	105,000
7330-01	Macomb Twp	Macomb Co	Trans main; looping	315	Future	3,380,000
7378-01	Port Huron	St Clair Co	Repl mains (Nern St Area)	315	Future	4,400,000
7300-01	Melvindale	Wayne Co	Repl mains/services; looping	315	Future	3,600,000
7322-01	YCUA	Washtenaw Co	Repl mains (E. Clark Rd)	300	Future	2,470,000
7291-01	Royal Oak Twp	Oakland Co	Repl mains	295	Future	805,000
7369-01	Huron Charter Twp	Wayne Co	WM Rpl	290	Future	2,665,000
7296-01	Clinton Twp	Macomb Co	Repl mains	225	Future	8,005,000

**\$ 141,985,000**

Category Description	Points	7173-01	7175-01	7238-01	7256-01	7271-01	7272-01	7281-01	7290-01	7291-01	7295-01	7296-01	7299-01	7300-01	7303-01	7309-01	7310-01	7311-01
<b>DRINKING WATER SYSTEM COMPLIANCE - TOTAL</b>	<b>450 (max)</b>	150	150	375	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	250																	
Non-Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	200			■														
Facility Upgrade to Maintain Compliance	150	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Aesthetic Upgrades to Maintain Compliance	25			■														
<b>INFRASTRUCTURE IMPROVEMENTS/UPGRADES - TOTAL</b>	<b>350 (max)</b>	125	125	125	125	250	250	150	25	125	100	25	225	125	150	350	250	250
Source/Treatment w/ Connecting Mains	125 (max)	0	0	125	0	0	0	0	0	0	0	0	0	0	25	125	0	0
Meet Minimum Capacity	100			■												■		
Reliability	75			■														
Other Upgrades	25			■												■		
Enforcement Action	25														■			
Source Water Protection	50			■														
Transmission/Distribution Mains	125 (max)	125	125	0	125	125	125	125	25	125	100	25	100	125	125	125	125	125
Meet Minimum Capacity	100	■	■		■	■	■	■		■				■	■	■	■	■
Reliability	75	■			■	■	■	■		■	■		■	■			■	■
Other Upgrades	25	■	■					■	■		■	■	■	■	■	■	■	■
Enforcement Action	25																	
Storage Facilities/Pumping Stations	125 (max)	0	0	0	0	125	125	25	0	0	0	0	125	0	0	125	125	125
Meet Minimum Capacity	100					■	■						■			■	■	■
Reliability	75																■	■
Other Upgrades	25					■	■	■					■			■	■	■
Enforcement Action	25																	
<b>POPULATION - TOTAL</b>	<b>50 (max)</b>	50	50	40	40	40	40	40	40	20	40	50	40	40	50	40	50	50
0-500	10		■															
501-3,300	20			■	■		■			■								
3,301-10,000	30	■																
10,001-50,000	40			■	■	■	■	■	■	■	■		■	■		■		
>50,000	50	■	■					■			■	■			■		■	■
<b>DISADVANTAGED COMMUNITY - TOTAL</b>	<b>50 (max)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50
Granted	50																■	■
<b>CONSOLIDATION - TOTAL</b>	<b>100 (max)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Achieve Compliance	100																	
Correct Deficiencies	60																	
Other	40																	
<b>COMP. WELLHEAD/SOURCE WATER PROTECT PLANS - TOTAL</b>	<b>100 (max)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Granted	100																	
<b>TOTAL PRIORITY POINTS ASSIGNED</b>	<b>1000 (max)</b>	325	325	540	315	440	440	340	215	295	290	225	415	315	350	540	500	500



Category Description	Points	7314-01	7316-01	7320-01	7322-01	7326-01	7327-01	7328-01	7329-01	7330-01	7331-01	7335-01	7339-01	7341-01	7344-01	7347-01	7355-01	7362-01
<b>DRINKING WATER SYSTEM COMPLIANCE - TOTAL</b>	<b>450 (max)</b>	150	150	150	150	150	150	150	150	150	175	150	150	450	150	175	150	400
Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	250																	■
Non-Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	200													■				
Facility Upgrade to Maintain Compliance	150	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Aesthetic Upgrades to Maintain Compliance	25										■					■		
<b>INFRASTRUCTURE IMPROVEMENTS/UPGRADES - TOTAL</b>	<b>350 (max)</b>	250	125	100	100	125	125	350	200	125	225	275	125	125	150	350	125	250
Source/Treatment w/ Connecting Mains	125 (max)	125	0	0	0	0	0	125	0	0	100	125	0	0	125	125	0	125
Meet Minimum Capacity	100	■						■				■			■	■		■
Reliability	75	■						■			■	■			■			■
Other Upgrades	25							■			■							■
Enforcement Action	25															■		
Source Water Protection	50							■										
Transmission/Distribution Mains	125 (max)	125	125	100	100	125	125	125	100	125	125	125	125	125	25	125	125	125
Meet Minimum Capacity	100	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■
Reliability	75	■	■			■	■	■		■	■	■		■		■	■	
Other Upgrades	25					■	■				■	■	■	■	■		■	■
Enforcement Action	25																	
Storage Facilities/Pumping Stations	125 (max)	0	0	0	0	0	0	100	100	0	0	25	0	0	0	125	0	0
Meet Minimum Capacity	100							■	■							■		
Reliability	75															■		
Other Upgrades	25											■						
Enforcement Action	25																	
<b>POPULATION - TOTAL</b>	<b>50 (max)</b>	40	50	50	50	50	50	30	40	40	30	50	40	50	30	50	50	50
0-500	10																	
501-3,300	20																	
3,301-10,000	30							■			■				■			
10,001-50,000	40	■							■	■			■					
>50,000	50		■	■	■	■	■					■		■		■	■	■
<b>DISADVANTAGED COMMUNITY - TOTAL</b>	<b>50 (max)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Granted	50																	
<b>CONSOLIDATION - TOTAL</b>	<b>100 (max)</b>	0	0	0	0	0	0	0	0	0	0	0	0	100	0	40	0	0
Achieve Compliance	100													■				
Correct Deficiencies	60																	
Other	40															■		
<b>COMP. WELLHEAD/SOURCE WATER PROTECT PLANS - TOTAL</b>	<b>100 (max)</b>	100	0	0	0	0	0	100	0	0	100	0	0	0	0	0	0	100
Granted	100	■						■			■							■
<b>TOTAL PRIORITY POINTS ASSIGNED</b>	<b>1000 (max)</b>	540	325	300	300	325	325	630	390	315	530	475	315	725	330	615	325	800

Category Description	Points	7368-01	7369-01	7371-01	7374-01	7375-01	7376-01	7377-01	7378-01	7379-01	7380-01	7380-02	7381-01	7382-01	7383-01	7384-01	7385-01	7385-99
<b>DRINKING WATER SYSTEM COMPLIANCE - TOTAL</b>	<b>450 (max)</b>	150	150	150	175	400	150	150	150	150	450	450	175	150	150	150	150	150
Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	250					■												
Non-Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	200										■	■						
Facility Upgrade to Maintain Compliance	150	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Aesthetic Upgrades to Maintain Compliance	25				■						■	■	■					
<b>INFRASTRUCTURE IMPROVEMENTS/UPGRADES - TOTAL</b>	<b>350 (max)</b>	275	100	125	350	250	350	125	125	125	125	125	350	100	250	250	250	250
Source/Treatment w/ Connecting Mains	125 (max)	125	0	0	125	125	125	0	0	0	125	125	125	0	0	0	0	0
Meet Minimum Capacity	100	■			■	■	■				■	■	■					
Reliability	75					■					■	■						
Other Upgrades	25	■				■	■											
Enforcement Action	25				■								■					
Source Water Protection	50																	
Transmission/Distribution Mains	125 (max)	125	100	125	125	125	125	125	125	0	0	0	125	100	125	125	125	125
Meet Minimum Capacity	100	■		■	■	■	■	■	■				■	■	■	■	■	■
Reliability	75	■	■	■	■		■		■				■		■	■	■	■
Other Upgrades	25	■	■			■	■	■	■									
Enforcement Action	25																	
Storage Facilities/Pumping Stations	125 (max)	25	0	0	125	0	125	0	0	125	0	0	125	0	125	125	125	125
Meet Minimum Capacity	100				■		■			■			■		■	■	■	■
Reliability	75				■								■		■	■	■	■
Other Upgrades	25	■					■			■					■	■	■	■
Enforcement Action	25																	
<b>POPULATION - TOTAL</b>	<b>50 (max)</b>	20	40	50	50	50	40	50	40	40	50	50	50	50	50	50	50	50
0-500	10																	
501-3,300	20	■																
3,301-10,000	30																	
10,001-50,000	40		■				■		■	■								
>50,000	50			■	■	■		■			■	■	■	■	■	■	■	■
<b>DISADVANTAGED COMMUNITY - TOTAL</b>	<b>50 (max)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Granted	50																	
<b>CONSOLIDATION - TOTAL</b>	<b>100 (max)</b>	0	0	0	40	0	0	0	0	0	0	0	40	0	0	0	0	0
Achieve Compliance	100																	
Correct Deficiencies	60																	
Other	40				■								■					
<b>COMP. WELLHEAD/SOURCE WATER PROTECT PLANS - TOTAL</b>	<b>100 (max)</b>	100	0	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0
Granted	100	■				■		■										
<b>TOTAL PRIORITY POINTS ASSIGNED</b>	<b>1000 (max)</b>	545	290	325	615	800	540	425	315	315	625	625	615	300	450	450	450	450

Category Description	Points	7386-01																	
<b>DRINKING WATER SYSTEM COMPLIANCE - TOTAL</b>	<b>450 (max)</b>	150																	
Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	250																		
Non-Acute Viol. of DW Standards, Health Advisory Levels, SWTT, Disease	200																		
Facility Upgrade to Maintain Compliance	150	■																	
Aesthetic Upgrades to Maintain Compliance	25																		
<b>INFRASTRUCTURE IMPROVEMENTS/UPGRADES - TOTAL</b>	<b>350 (max)</b>	125																	
Source/Treatment w/ Connecting Mains	125 (max)	0																	
Meet Minimum Capacity	100																		
Reliability	75																		
Other Upgrades	25																		
Enforcement Action	25																		
Source Water Protection	50																		
Transmission/Distribution Mains	125 (max)	125																	
Meet Minimum Capacity	100	■																	
Reliability	75	■																	
Other Upgrades	25	■																	
Enforcement Action	25																		
Storage Facilities/Pumping Stations	125 (max)	0																	
Meet Minimum Capacity	100																		
Reliability	75																		
Other Upgrades	25																		
Enforcement Action	25																		
<b>POPULATION - TOTAL</b>	<b>50 (max)</b>	30																	
0-500	10																		
501-3,300	20																		
3,301-10,000	30	■																	
10,001-50,000	40																		
>50,000	50																		
<b>DISADVANTAGED COMMUNITY - TOTAL</b>	<b>50 (max)</b>	0																	
Granted	50																		
<b>CONSOLIDATION - TOTAL</b>	<b>100 (max)</b>	0																	
Achieve Compliance	100																		
Correct Deficiencies	60																		
Other	40																		
<b>COMP. WELLHEAD/SOURCE WATER PROTECT PLANS - TOTAL</b>	<b>100 (max)</b>	0																	
Granted	100																		
<b>TOTAL PRIORITY POINTS ASSIGNED</b>	<b>1000 (max)</b>	305																	

**Michigan Drinking Water Revolving Fund  
Estimated Category Costs for FY 2013 Draft Project Priority List (PPL)**

Project No	Transmission/Distribution	Treatment	Storage	Source	Other	Total
7175-01	\$4,360,000					\$4,360,000
7256-01	\$4,320,000					\$4,320,000
7281-01	\$6,055,000					\$6,055,000
7290-01	\$2,147,789				\$2,317,211	\$4,465,000
7295-01	\$880,000					\$880,000
7303-01	\$11,545,000					\$11,545,000
7310-01	\$9,790,588				\$4,079,412	\$13,870,000
7320-01	\$390,000					\$390,000
7326-01	\$3,440,000					\$3,440,000
7329-01	\$4,290,229		\$1,314,771			\$5,605,000
7335-01	\$5,455,000					\$5,455,000
7344-01		\$2,500,000		\$500,000		\$3,000,000
7355-01	\$7,960,000					\$7,960,000
7371-01	\$150,000					\$150,000
7375-01				\$2,500,000		\$2,500,000
7376-01	\$1,647,321	\$187,500	\$187,500	\$133,929	\$93,750	\$2,250,000
7377-01	\$4,729,662				\$4,670,338	\$9,400,000
7379-01			\$430,000			\$430,000
7380-01	\$7,500,000	\$38,500,000	\$8,500,000		\$2,500,000	\$57,000,000
7381-01					\$1,160,000	\$1,160,000
7382-01	\$615,000					\$615,000
7383-01	\$2,695,000					\$2,695,000
7384-01	\$380,000					\$380,000
7385-01	\$1,470,000					\$1,470,000
7386-01	\$1,260,000					\$1,260,000
	\$81,080,589	\$41,187,500	\$10,432,271	\$3,133,929	\$14,820,711	\$150,655,000

# of projects	18	3	4	3	6
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**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, November 05, 2012 3:28 PM  
**To:** 'Janet Kuefler'  
**Subject:** RE: \$106 grant gw work  
**Attachments:** Request for WQ Monitoring 10-31-12 wb-swas-reqform\_247026\_7 (1).doc

Janet,

I was cleaning out my inbox and came across this message still highlighted. I thought I would let you know what I submitted in response to the annual request from the Surface Water Assessment Section for suggested monitoring in support of their programs. I don't know if it will go anywhere or just aggravate some program managers, but Liane suggested we put forth a request so I submitted this one. It's not Groundwater work, but it is related to UCMR3 and Source Water Programs at surface water systems.

Richard

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**From:** Janet Kuefler [mailto:Kuefler.Janet@epamail.epa.gov]  
**Sent:** Wednesday, September 26, 2012 3:34 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** \$106 grant gw work

Rich--this is something that Tom Poy had asked me to put together for internal purposes in May 2012; we looked at internal documents only (did not verify with states). I thought that you might find it helpful.

+++++

Janet Kuefler  
State Programs Team Leader  
Ground Water and Drinking Water Branch  
U.S. EPA Region 5  
77 W. Jackson Blvd, WG-15J  
Chicago, IL 60604

[kuefler.janet@epa.gov](mailto:kuefler.janet@epa.gov)

**IDEM.** According to the 2011-13 Indiana EnPPA, IDEM plans to spend \$4,965,604 (91.56%) over 2 years for surface water and \$457,966 (8.44%) over 2 years for groundwater. The total amount of 106 funds that will be spent for Groundwater and Surface Water programs is \$5,423,570. It appears that the percentage of funds that Indiana intends to spend on groundwater-related CWA Section 106 work is well below the recommended 15% level.

FY 2010 funding for ground water work was \$46,640, which went toward the salary for 2 summer interns and travel costs for network sampling; FY 2011 funding was \$57,091 for development of an unconsolidated aquifer sensitivity map for Indiana. IDEM uses \$106 funds to supplement the implementation of the ground water component of Indiana's Water Quality Monitoring Strategy

(Strategy). They utilize these funds for summer interns and sampling supplies and depending upon the year this actual funding amount fluctuates.

**IEPA.** IEPA funding targets, per the EnPPA documents, are at 15% for GW work. (the FY 2011 and 2012 funding targets for IL Section 106 for GW activities are \$819,500 and \$818,200 respectively, our of FY 2011 and FY 2012 are \$5,463,400 and \$5,454,700 respectively), however, specific activities were not included in the EnPPA with the exception of GWR related work, and the State does not have a separate workplan under Section 106.

In a 2007 survey of SWP work, the States reported that "Funding and staff levels are below what would be needed to effectively assist local communities in developing source water protection and management programs. Currently, the Groundwater Section is down two FTEs and has been for several years." and, "The Bureau of Water no longer has a budgeted line-item for the SWP Program. Therefore, it is nearly impossible to estimate funding sources." and "The Groundwater Section has 14 staff, of which about ½ spend a portion of their time doing SWP." However, there were not responses to any of the funding sources questions, but there was a statement that minimal state funds are used for SWP work.

**MDEQ** We believe that very little or no §106 funds are going to ground water activities.

The 106 grant and the 319 grant are part of a PPG, so their activities are combined into one workplan. The FY 2012 workplan for 106 and 319 for MI shows only Management/Administration, NPDES/Stormwater permits program, and Surface Water Restoration and Protection program. There is nothing in the 25-page workplan related to groundwater except the last page of Attachment C, Michigan's FY 2012 Compliance Monitoring Strategy for the NPDES program, where it says Michigan has no plan to commit to any groundwater activity related to NPDES. There is a Monitoring and Assessment Section, but it is specifically related to surface waters. (In 2007, MDEQ had 4 FTE for the SWP program and used some very small amount of §106 funds for this work--they reported that 90% of their funding of the 4 FTEs was from DWSRF set-asides)

**MN**

#### **MDH FY 11- \$66,593**

Conduct Reconnaissance Sampling of Private and Public Water Supply Wells-

Various reconnaissance samples (1,112) were analyzed and performed with total costs of \$53,747.

Evaluate natural water quality in community water supply wells –Monitor 125 community water wells on an annual basis to support assessing vulnerability, refining treatment, and updating assessments.

Characterize groundwater quality in wellhead protection areas – Provided technical support to public water suppliers for 1) preparing and implementing wellhead protection plans and 2) managing potential contamination sources that are inventoried during a sanitary survey. Chemistry data is used for characterizing the rates of groundwater recharge and potential impacts of well water quality attributed to land use. The results help refine the approach that will be used to conduct assessment source water monitoring under the federal Ground Water Rule and to assess overall water quality within wellhead protection areas.

I believe that MDH has also been very active in the past several years in setting GW standards (this is correlated with the emerging contaminants work, which is also highlighted in the EnPPA), but I believe this is funded through the tax revenue. MDH uses considerable DWSRF set-asides and state

funding sources for SWP work.

**MPCA.** We do not have the exact funding amount used by MPCA for ground water activities.

MPCA's EnPPA does not include specific activities but does include narrative of management priorities, which include ambient gw monitoring and constructing new wells in vulnerable aquifers to add to the monitoring network. Priorities include working with sister agencies (Health and Ag), tracking trends for nitrates, VOCs, chlorides, pesticides and other parameters, focusing on vulnerable aquifers, recharge zones and areas where land use is changing. The EnPPA talks about specific issues, such as human-caused impacts to ground water quality are apparent in many areas of the state: Twin Cities metropolitan area, Rochester and St. Cloud--elevated concentrations of chloride and nitrate and detectable concentrations of VOCs are common; In rural and agricultural areas, nitrate concentrations are frequently elevated or exceed standards; and pesticides and pesticide degradates are commonly detected, though at concentrations that are nearly always less than applicable drinking water standards. Nutrient issues are specifically mentioned: Areas of impacted ground water correlate well with land uses that are known to cause the observed quality impacts. The prevalence of elevated nitrate concentrations in ground water in regions dominated by agricultural land uses and in unsewered residential areas is particularly noteworthy.

For MPCA there is much more GW work going on now than years ago when there was a disinvestment in GW monitoring (even before the sales tax revenues came into play). The grant workplan calls for 100 wells to be monitored per year.

**OEPA:** FY 12 funding is at 15%--Total federal funding amount (surface and ground water): \$5,355,800  
Ground water amount: \$803,400 (15%)

FY 11 & FY12: Primary activities included in Ohio's FFY2012 CWA Section 106—Ground Water Section work plan:

- ground water quality monitoring and characterization
  - implementing Ohio's Ambient Ground Water Quality Monitoring Network
- source water protection
  - conducting special studies in cooperation with other Ohio EPA programs and Ohio agencies (e.g., Ohio Department of Health) to evaluate local ground water quality impacts
  - maintain and update the Ground Water Quality Impacts database
  - provide GIS support for the development of source water assessment reports for new PWSs and drinking water source protection plans for CWSs
  - continue development of GIS capabilities to support source water assessment and protection programs, water quality characterization, underground injection control, and public drinking water supervision
- integration of CWA and SDWA programs to protect sources of drinking water
  - complete the ground water section of the 2012 Integrated Water Quality Report
  - complete the public drinking water supply beneficial use assessments for all locations with sufficient data and include the findings in the 2012 Integrated Water Quality Report
  - provide technical assistance to CWA programs (e.g., water quality certifications, nonpoint source pollution, NPDES, TMDL) to ensure protection of ground water and sources of drinking water

- provide technical assistance for Ohio's public water supply program
  - develop GWR program, including implementation of the hydrogeological site assessment
- participate on boards, commissions, and organizations to promote a comprehensive and coordinated ground water protection and management program

**WDNR:** We do not have the exact funding amount used by WDNR for ground water activities.

#### FY 2011

- Coordination with the WI Groundwater Coordinating Council - State agencies with separate authority to take action to protect groundwater met to assess the condition of groundwater statewide, and developed a report to the legislature, to help them prioritize resources to address the greatest threats.
- Setting Ground Water Quality Standards - Ground Water Standards for 15 substances that included six isomers of dinitrotoluene (DNT) and an enforceable standard for perchlorate were promulgated.
- Reducing N in groundwater in prioritized subwatersheds - A draft strategy to reduce nitrogen in groundwater in targeted subwatersheds has been developed and shared with USEPA Region 5.
- Maintaining and enhancing ground water related databases - State databases used to capture information used by agencies to protect groundwater were maintained.
- High nitrate PWSs in WI were mapped - A statewide map was developed of public water systems with high nitrates. This map and an associated strategy will be used by the state to reduce nutrients in Wisconsin waters.
- Source Water Protection Plans were developed and implemented - Risk to public health was minimized through source water protection for 13% of the population served by CWSs.
- Guidance was provided to those putting in monitoring wells - Monitoring wells were developed in a way that allowed the capture of accurate samples of ground water quality.
- Information and training about ground water was delivered to the public, including sand model demonstrations at elementary schools.
- 6,500 well construction reports were reviewed.
- 4 civil prosecutions were settled against well drillers and pump installers for total forfeitures of \$43,000.
- Plans and specifications for high capacity wells were reviewed, on average, in 26 days.

#### FY 2012

In addition to the above, a nitrate reduction strategy will be implemented to a degree in accordance with funds available.





**Michigan Department of Environmental Quality**  
**Water Resources Division**  
**WATER QUALITY MONITORING REQUEST**  
*Completion of this form is voluntary. Submission of this form is not required.*

**Requestor Information (please print or type):**

NAME Richard Benzie, Chief, Community Drinking Water Unit			ORGANIZATION Office of Drinking Water and Municipal Assistance, DEQ
MAILING ADDRESS 525 W. Allegan			PHONE # (517) 241-1245
CITY Lansing	STATE MI	ZIP 48909	E-MAIL ADDRESS benzier@michigan.gov

**Please identify the water body name(s) and location(s) recommended for monitoring.**

WATER BODY NAME(S) Raisin River, Lake St. Clair Shoreline, Flint River, Huron River, Platte/Boardman Watershed, Elk/Pine/Betsie Watershed and Ontonagon/Iron Watershed	LATITUDE See below	LONGITUDE See below
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\_\_\_\_\_ ¼ of \_\_\_\_\_ ¼ Section: \_\_\_\_\_, Town: T\_\_\_\_\_, Range: R\_\_\_\_\_, Township: \_\_\_\_\_, County: \_\_\_\_\_.

PLEASE DESCRIBE THE REASON FOR MONITORING, LIST ANY QUESTIONS YOU WOULD LIKE ANSWERED, AND SPECIFY THE MONITORING PARAMETERS DESIRED:

The locations listed below are drinking water intakes located in the water bodies listed above, most of whom are targeted for monitoring in the Strategic Environmental Water Quality Monitoring Program for Michigan's surface waters. In addition to the parameters WRD typically monitors in targeted watersheds, Michigan's Public Water Supply Supervision (PWSS) program requests these locations also be sampled for 1,4-dioxane, chlorate, perfluorinated compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA and PFBS), and the following hormones: 17-B-estradiol, 17-@-ethynylestradiol, estriol, equilin, estrone, testosterone and 4-androstene-3,17-dione. These parameters are among the 30 emerging contaminants that are included in EPA's third Unregulated Contaminant Monitoring Rule (UCMR3) that requires certain public water systems to monitor treated drinking water between 2013 and 2015. Monitoring at these intakes can be easily accomplished as sampling stations are already available. Results of this monitoring will provide drinking water systems with the level of emerging contaminants in their source and allow them to focus their Source Water Protection Programs on reducing the presence of these contaminants in their source waters instead of employing costly treatment. It will also facilitate a collaborative effort between the Safe Drinking Water and Clean Water (PWSS and NPDES) programs in Michigan.

SUPPLY NAME	Intake Name	LATITUDE	LONGITUDE
City of Adrian	Lake Adrian Intake	41.91284	-84.03665
City of Algonac	Raw Water Intake Line	42.62083	-82.5264
City of Ann Arbor	Huron River Intake at Barton Pond	42.30864	-83.75374
Village of Blissfield	Raisin River Intake	41.82826	-83.87898
City of Charlevoix	Buried Screen Intake	45.32222	-85.27028
Village of Deerfield	Raisin River Intake	41.88335	-83.78325
City of Flint	Concrete Shore Intake - Standby	43.05489	-83.66871
City of Grosse Pointe Farms/Highland Park	Lake St Clair Intake	42.40313	-82.87852
Huron Regional Water Authority	Lake Huron Intake	44.054667	-83.0025
Ira Township Water Treatment Facility	Lake St Clair Intake	42.68056	-82.67083
Village of Lexington	Lexington Intake	43.26444	-82.51306
City of Monroe / Frenchtown Township	Lake Erie 30" Intake	41.93667	-83.23862
City of Monroe / Frenchtown Township	Lake Erie 42" Intake	41.94173	-83.24994
Mount Clemens	Lake St Clair Intake	42.55825	-82.82481
New Baltimore	New Baltimore WTP Intake	42.67778	-82.73195
Ontonagon	Lake Superior Intake	46.83585	-89.574333
City of Traverse City	East Bay Intake	44.7694	-85.53791



**Michigan Department of Environmental Quality**

**Water Resources Division**

**WATER QUALITY MONITORING REQUEST**

*Completion of this form is voluntary. Submission of this form is not required.*

- If latitude and longitude coordinates are not listed above, please attach one or more maps or drawings of suggested sampling locations (if possible). Include in the map or drawing nearby roads and other landmarks.
- The decimal degrees format of latitude/longitude coordinates is preferred (e.g., 42.123456, -84.123456), though not required.

**Please e-mail, mail, or fax completed form to:**

Jeff Varricchione  
Department of Environmental Quality  
Water Resources Division  
P.O. Box 30458  
Lansing, Michigan 48909-7958  
varricchionej@michigan.gov  
Fax: 517-373-9958

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, March 20, 2013 5:37 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** RE: request for information to share during CWA/SDWA integration session: RE: Draft State Directors' Meeting Agenda  
**Attachments:** Request for WQ Monitoring 10-31-12 wb-swas-reqform\_247026\_7 (1).doc

Your message reminded me that I needed to follow-up on this subject. One CWA/SDWA program integration effort that would be nice to report at the upcoming meeting would be the funding of our proposed monitoring at selected intakes for a number of chemicals of concern which I submitted to WRD for possible funding last October. My request apparently created a stir at Region 5 among the CWA and SDWA program staff over the merits of such a proposal and whether Region 5 should weigh in and lend support.

I seem to recall that WRD said they were going to notify applicants in Feb/March, but I have not heard anything. Maybe you could inquire as to the status of those awards and consideration of our proposal? If you need it, use the program integration topic as a means to broach the subject.

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, March 20, 2013 4:52 PM  
**To:** Creal, William (DEQ)  
**Cc:** Benzie, Richard (DEQ); Monosmith, Carrie (DEQ)  
**Subject:** FW: request for information to share during CWA/SDWA integration session: RE: Draft State Directors' Meeting Agenda

Anything you would like to see us share and/or update at our upcoming PWSS Director's meeting?

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**From:** Drake, Wendy [<mailto:drake.wendy@epa.gov>]  
**Sent:** Friday, March 15, 2013 7:35 PM  
**To:** [alao@idem.in.gov](mailto:alao@idem.in.gov); Benzie, Richard (DEQ); Dave McMillan; [gerald.smith@state.mn.us](mailto:gerald.smith@state.mn.us); [jill.jonas@wisconsin.gov](mailto:jill.jonas@wisconsin.gov); Karla Peterson; [lee.boushon@wisconsin.gov](mailto:lee.boushon@wisconsin.gov); [mike.baker@epa.state.oh.us](mailto:mike.baker@epa.state.oh.us); Monosmith, Carrie (DEQ); [pcarroll@idem.in.gov](mailto:pcarroll@idem.in.gov); [randy.ellingboe@state.mn.us](mailto:randy.ellingboe@state.mn.us); [Rick.Cobb@illinois.gov](mailto:Rick.Cobb@illinois.gov); [robert.smude@state.mn.us](mailto:robert.smude@state.mn.us); Shekter Smith, Liane (DEQ)  
**Cc:** Poy, Thomas  
**Subject:** request for information to share during CWA/SDWA integration session: RE: Draft State Directors' Meeting Agenda

Hi, everyone.

To follow-up on Tom's e-mail below, we'd like to include a session on CWA/SDWA integration during the upcoming state directors' meeting. This session is currently scheduled for Tuesday, April 16, at 3:00 p.m. The proposed topics include national and regional EPA CWA/SDWA integration nutrient-related activities, such as: (1) activities in the Western Basin of Lake Erie, (2) state nutrients frameworks, and (3) WI nitrate project status. We'll be discussing where and how to better coordinate between states and Region 5 during this meeting.

If you and/or any of your staff would be interested in presenting information about your work in nutrients, harmful algal blooms, or what projects are happening in Lake Erie, etc., please let me know. And if you have additional ideas for topics, please let me know that, too.

Thanks, and I look forward to seeing you in April!

Wendy

Wendy Drake | U.S. EPA, Region 5, Water Division, Ground Water and Drinking Water Branch  
77 West Jackson Boulevard, WG-15J | Chicago, IL 60604 | Phone: 312-886-6705  
[drake.wendy@epa.gov](mailto:drake.wendy@epa.gov)

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**From:** Poy, Thomas

**Sent:** Tuesday, February 26, 2013 8:17 AM

**To:** [alao@idem.in.gov](mailto:alao@idem.in.gov); [benzier@michigan.gov](mailto:benzier@michigan.gov); Dave McMillan; [gerald.smith@state.mn.us](mailto:gerald.smith@state.mn.us); [jill.jonas@wisconsin.gov](mailto:jill.jonas@wisconsin.gov); Karla Peterson; [lee.boushon@wisconsin.gov](mailto:lee.boushon@wisconsin.gov); [mike.baker@epa.state.oh.us](mailto:mike.baker@epa.state.oh.us); [monosmithc@michigan.gov](mailto:monosmithc@michigan.gov); [pcarroll@idem.in.gov](mailto:pcarroll@idem.in.gov); [randy.ellingboe@state.mn.us](mailto:randy.ellingboe@state.mn.us); [Rick.Cobb@illinois.gov](mailto:Rick.Cobb@illinois.gov); [robert.smude@state.mn.us](mailto:robert.smude@state.mn.us); [shakterl@michigan.gov](mailto:shakterl@michigan.gov)

**Cc:** R5 WD GWDW

**Subject:** Draft State Directors' Meeting Agenda

Attached please find a rough draft of the State Directors' Meeting Agenda. If you have topics to propose, please let me know.  
Thanks

Tom

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Tom Poy  
Chief, Ground Water and Drinking Water Branch  
USEPA - Region 5  
(312) 886-5991



**Michigan Department of Environmental Quality**  
**Water Resources Division**  
**WATER QUALITY MONITORING REQUEST**  
*Completion of this form is voluntary. Submission of this form is not required.*

**Requestor Information (please print or type):**

NAME Richard Benzie, Chief, Community Drinking Water Unit			ORGANIZATION Office of Drinking Water and Municipal Assistance, DEQ
MAILING ADDRESS 525 W. Allegan			PHONE # (517) 241-1245
CITY Lansing	STATE MI	ZIP 48909	E-MAIL ADDRESS benzier@michigan.gov

**Please identify the water body name(s) and location(s) recommended for monitoring.**

WATER BODY NAME(S) Raisin River, Lake St. Clair Shoreline, Flint River, Huron River, Platte/Boardman Watershed, Elk/Pine/Betsie Watershed and Ontonagon/Iron Watershed	LATITUDE See below	LONGITUDE See below
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\_\_\_\_\_ ¼ of \_\_\_\_\_ ¼ Section: \_\_\_\_\_, Town: T\_\_\_\_\_, Range: R\_\_\_\_\_, Township: \_\_\_\_\_, County: \_\_\_\_\_.

PLEASE DESCRIBE THE REASON FOR MONITORING, LIST ANY QUESTIONS YOU WOULD LIKE ANSWERED, AND SPECIFY THE MONITORING PARAMETERS DESIRED:

The locations listed below are drinking water intakes located in the water bodies listed above, most of whom are targeted for monitoring in the Strategic Environmental Water Quality Monitoring Program for Michigan's surface waters. In addition to the parameters WRD typically monitors in targeted watersheds, Michigan's Public Water Supply Supervision (PWSS) program requests these locations also be sampled for 1,4-dioxane, chlorate, perfluorinated compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA and PFBS), and the following hormones: 17-B-estradiol, 17-@-ethynylestradiol, estriol, equilin, estrone, testosterone and 4-androstene-3,17-dione. These parameters are among the 30 emerging contaminants that are included in EPA's third Unregulated Contaminant Monitoring Rule (UCMR3) that requires certain public water systems to monitor treated drinking water between 2013 and 2015. Monitoring at these intakes can be easily accomplished as sampling stations are already available. Results of this monitoring will provide drinking water systems with the level of emerging contaminants in their source and allow them to focus their Source Water Protection Programs on reducing the presence of these contaminants in their source waters instead of employing costly treatment. It will also facilitate a collaborative effort between the Safe Drinking Water and Clean Water (PWSS and NPDES) programs in Michigan.

SUPPLY NAME	Intake Name	LATITUDE	LONGITUDE
City of Adrian	Lake Adrian Intake	41.91284	-84.03665
City of Algonac	Raw Water Intake Line	42.62083	-82.5264
City of Ann Arbor	Huron River Intake at Barton Pond	42.30864	-83.75374
Village of Blissfield	Raisin River Intake	41.82826	-83.87898
City of Charlevoix	Buried Screen Intake	45.32222	-85.27028
Village of Deerfield	Raisin River Intake	41.88335	-83.78325
City of Flint	Concrete Shore Intake - Standby	43.05489	-83.66871
City of Grosse Pointe Farms/Highland Park	Lake St Clair Intake	42.40313	-82.87852
Huron Regional Water Authority	Lake Huron Intake	44.054667	-83.0025
Ira Township Water Treatment Facility	Lake St Clair Intake	42.68056	-82.67083
Village of Lexington	Lexington Intake	43.26444	-82.51306
City of Monroe / Frenchtown Township	Lake Erie 30" Intake	41.93667	-83.23862
City of Monroe / Frenchtown Township	Lake Erie 42" Intake	41.94173	-83.24994
Mount Clemens	Lake St Clair Intake	42.55825	-82.82481
New Baltimore	New Baltimore WTP Intake	42.67778	-82.73195
Ontonagon	Lake Superior Intake	46.83585	-89.574333
City of Traverse City	East Bay Intake	44.7694	-85.53791



**Michigan Department of Environmental Quality**

**Water Resources Division**

**WATER QUALITY MONITORING REQUEST**

*Completion of this form is voluntary. Submission of this form is not required.*

- If latitude and longitude coordinates are not listed above, please attach one or more maps or drawings of suggested sampling locations (if possible). Include in the map or drawing nearby roads and other landmarks.
- The decimal degrees format of latitude/longitude coordinates is preferred (e.g., 42.123456, -84.123456), though not required.

**Please e-mail, mail, or fax completed form to:**

Jeff Varricchione  
Department of Environmental Quality  
Water Resources Division  
P.O. Box 30458  
Lansing, Michigan 48909-7958  
varricchionej@michigan.gov  
Fax: 517-373-9958

Message

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**From:** Prysby, Mike (DEQ) [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5DB07892EAA740C09ADBB62A79ADD8F4-PRYSBY MIKE]  
**Sent:** 2/7/2014 6:24:02 PM  
**To:** Benzie, Richard (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9ec5ca50ffe4e9392405565b506bc37-Benzie Richard]  
**Subject:** RE: Final List for 2014 Lab Training

Thanks Richard...

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, February 07, 2014 11:50 AM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: Final List for 2014 Lab Training

There currently is an opening on the 27<sup>th</sup>. I will move you to that date. That means there is an opening now on the 13<sup>th</sup>.

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, February 07, 2014 9:56 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Final List for 2014 Lab Training

Richard,

Sorry about the delay on responding, I had to wait and see which dates to reserve for our on-going KWA pipeline design meetings with Genesee County. The authority recently provided us with the meeting dates and, unfortunately, one of the many review meetings is scheduled on March 13<sup>th</sup>; thus I cannot commit to the lab training. The alternate date, March 27<sup>th</sup> will work for me....if it becomes available; otherwise, I will wait for the next available training session. Thanks!

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

**From:** Benzie, Richard (DEQ)

**Sent:** Wednesday, January 15, 2014 7:12 PM

**To:** Bolf, Michael (DEQ); Prysby, Mike (DEQ); Doyle, Mark (DEQ); Chuhran, Laura (DEQ)

**Cc:** Busch, Stephen (DEQ); Lachance, Amy (DEQ); DeBruyn, Dana (DEQ); Pieper, Julia (DEQ)

**Subject:** FW: Final List for 2014 Lab Training

Please confirm your availability and willingness to attend a lab training session on March 13<sup>th</sup> that the lab was willing to add when I learned of your interest in participating in this event after all available slots were full.

Do not count on the March 27 as an alternate date at this point – it may be the 13<sup>th</sup> or wait until next year. Thank you.

Richard Benzie, P.E., Acting Chief

Field Operations Section

Office of Drinking Water and Municipal Assistance, MDEQ

517-284-6512



**From:** Pieper, Julia (DEQ)

**Sent:** Tuesday, January 14, 2014 8:09 AM

**To:** Benzie, Richard (DEQ); Krisztian, George (DEQ)

**Cc:** Bloemker, Jon (DEQ); Pomaville, Katelyn (DEQ); Butler, Sonya (DEQ); Thomas, Chuck (DEQ); Donaldson, Kristina (DEQ); DeBruyn, Dana (DEQ); Busch, Stephen (DEQ); Lachance, Amy (DEQ); Shekter Smith, Liane (DEQ)

**Subject:** RE: Final List for 2014 Lab Training

Richard,

Let's schedule another session for March 13. If there are still additional requests, we could run our last session on March 27.

Julia Pieper

Drinking Water Coordinator

Organic Sub-Unit Manager

DEQ-RRD-Laboratory Services

[pieperj2@michigan.gov](mailto:pieperj2@michigan.gov)

(517)-335-8076 phone

(517)-335-8562 fax

**From:** Benzie, Richard (DEQ)

**Sent:** Friday, January 10, 2014 5:47 PM

**To:** Pieper, Julia (DEQ); Krisztian, George (DEQ)

**Cc:** Bloemker, Jon (DEQ); Pomaville, Katelyn (DEQ); Butler, Sonya (DEQ); Thomas, Chuck (DEQ); Donaldson, Kristina (DEQ); DeBruyn, Dana (DEQ); Busch, Stephen (DEQ); Lachance, Amy (DEQ); Shekter Smith, Liane (DEQ)

**Subject:** RE: Final List for 2014 Lab Training

Julia,

Since this list was completed, I have received about 5 or 6 more requests from district staff. I have told them they are out of luck and said I hoped there would be more opportunities next year. But then I thought it couldn't hurt to ask if

there was any possibility of one or two more sessions this year, especially since some of the staff expressing an interest are from districts that did not have an opportunity to express an interest because their supervisor was out of the office during the time frame I established for doing so.

If it can't be done, they can wait until next year, but if you can work in another day or two, please let me know. Thanks.

Richard Benzie, P.E., Acting Chief

Field Operations Section

Office of Drinking Water and Municipal Assistance, MDEQ

517-284-6512

**From:** Pieper, Julia (DEQ)

**Sent:** Thursday, January 09, 2014 4:22 PM

**To:** Benzie, Richard (DEQ); Lachance, Amy (DEQ); Krisztian, George (DEQ)

**Cc:** Bloemker, Jon (DEQ); Pomaville, Katelyn (DEQ); Butler, Sonya (DEQ); Thomas, Chuck (DEQ); Donaldson, Kristina (DEQ); DeBruyn, Dana (DEQ)

**Subject:** RE: Final List for 2014 Lab Training

Richard,

We do not need any more information. I will give the participants' names to security, but state employees with ID are usually readily admitted. We look forward to meeting our colleagues and providing information on our work here at the lab.

Julia Pieper

Drinking Water Coordinator

Organic Sub-Unit Manager

DEQ-RRD-Laboratory Services

[pieperj2@michigan.gov](mailto:pieperj2@michigan.gov)

(517)-335-8076 phone

(517)-335-8562 fax

**From:** Benzie, Richard (DEQ)

**Sent:** Thursday, January 09, 2014 1:41 PM

**To:** Lachance, Amy (DEQ); Pieper, Julia (DEQ); Krisztian, George (DEQ)

**Cc:** Bloemker, Jon (DEQ); Pomaville, Katelyn (DEQ); Butler, Sonya (DEQ); Thomas, Chuck (DEQ); Donaldson, Kristina (DEQ); DeBruyn, Dana (DEQ)

**Subject:** RE: Final List for 2014 Lab Training

Thanks, Amy and Katelyn.

Julia, we now have 4 staff signed up for each of the 4 days. The first one is a week from today and the staff attending are Stephanie Johnson from our SE MI office and Mark Conradi, Jessica Ferris and Jaclyn Merchant from the SRF Section.

Do you need anything further from us or do they just show up early on their assigned day?

**From:** Lachance, Amy (DEQ)

**Sent:** Thursday, January 09, 2014 12:18 PM

**To:** Benzie, Richard (DEQ); Pieper, Julia (DEQ); Krisztian, George (DEQ)

**Cc:** Bloemker, Jon (DEQ); Pomaville, Katelyn (DEQ)

**Subject:** RE: Final List for 2014 Lab Training

No problem – switch Katelyn to 2/27/14. Thanks - Amy

Amy Lachance

Grand Rapids and Kalamazoo District Supervisor

Office of Drinking Water and Municipal Assistance

Department of Environmental Quality

Cell Phone Number:

**PPI**

**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, January 09, 2014 10:01 AM  
**To:** Lachance, Amy (DEQ); Pieper, Julia (DEQ); Krisztian, George (DEQ)  
**Cc:** Bloemker, Jon (DEQ)  
**Subject:** RE: Final List for 2014 Lab Training

Amy,

I screwed up. I was supposed to move Joe Reinke from February 27<sup>th</sup> to January 30<sup>th</sup> because he is at another training session that day. Would it be possible for Katelyn to attend on February 27<sup>th</sup>? Thanks.

Richard

**From:** Lachance, Amy (DEQ)  
**Sent:** Thursday, January 09, 2014 7:58 AM  
**To:** Benzie, Richard (DEQ); Pieper, Julia (DEQ); Krisztian, George (DEQ)  
**Subject:** RE: Final List for 2014 Lab Training

Yes — please put Katelyn Pomaville in the last slot on 1/30. Thanks.

Amy Lachance

Grand Rapids and Kalamazoo District Supervisor

Office of Drinking Water and Municipal Assistance

Department of Environmental Quality

Cell Phone Number: PPI

**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, January 08, 2014 5:39 PM  
**To:** Pieper, Julia (DEQ); Krisztian, George (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Busch, Stephen (DEQ); Donaldson, Kristina (DEQ); Lachance, Amy (DEQ); Thomas, Chuck

(DEQ); DeBruyn, Dana (DEQ); Butler, Sonya (DEQ); Shekter Smith, Liane (DEQ)

**Subject:** Final List for 2014 Lab Training

Here's the final list of FOS and RLS staff and the days they will attend. Unless I missed someone, there is one slot still available on January 30<sup>th</sup>.

Kris Philip wonders if Katelyn Pomaville in the Kalamazoo office was able to attend last year. If not, I would give her priority for the open slot. If she did attend, then it is possible we can add one additional employee to the roster on January 30<sup>th</sup>. No promises, but let me know if you have someone in mind. Thanks.

---

**From:** Marczak, Barbara <BMarczak@preinnewhof.com>  
**Sent:** Thursday, August 07, 2014 9:38 AM  
**To:** Koch, David S.;Purkiss, Dave;TimP.Murphy@schneider-electric.com;Braasch, Julie;jobrien@gcdcwws.com;mike.winegard@aecom.com;djansen@gcdcwws.com;Whitehead, Benjamin C. (Ben;TenBroek, Mark;tpai@baycodws.org;Elenbaas, Chris;Steglitz, Brian;Gilliland, Carolyn;Putala, Vicki;kmondora@fhgov.com;Wagenmaker, Trevor;bwrubel@cityofmarysvillemi.com;Kubiak, Heather;Cox, Carrie;Terry Biederman;Phillips, Brian D.;Sanjeev Verma;Alisha Cooley;Paul Patterson;Drinan, Jennifer;Steve J Liebrecht;thurstonb@michigna.gov;Bloemker, Jon (DEQ);Alan Steinman;tom.getting@xylem.com;Zeyad Ahmed;dwhand@mtu.edu;Steinle, Michael;Tabor, Amy;Art Krueger;Benzie, Richard (DEQ);ericksonk@wyomingmi.gov;rrenner@waterrf.org;ldickhoff@waterrf.org;Baar, David;rng@lbwl.org  
**Cc:** Eric Way (eway.awwa@gmail.com);Dave Timm;Bonniifer Ballard (bballard.awwa@gmail.com)  
**Subject:** Michigan Section AWWA annual conference - Important information  
**Attachments:** 2014 Schedule of Technical Events CECs-draft5.pdf; 2014 Speaker Letter 2.docx; Release form.doc; Speaker bio form.doc  
  
**Importance:** High

Speakers:

Thank you for agreeing to speak at our annual conference in September. There are some of deadlines coming up and some things that you need to verify and check for us.

**1. Program Schedule**

I have attached the program schedule. I apologize in advance for any errors. Please review this carefully and let me know if there are any changes needed to your presentation title or how your name is listed (spelling, PE, or other designations) by **August 10, 2014**. Please especially pay attention to those of you who have co-presenters. We will be printing the final program in the next couple of weeks so this is really important and your last chance.

**2. Uploading Presentation**

Directions for uploading your presentation are provided in the attached letter. Please upload no later than August 29, 2014.

**3. Conference Registration/Lodging/Meals/Golf**

Please also note upcoming deadlines for conference registration, lodging and meals. We hope you will attend the conference but even if you are not staying, please note that you will need to register for meals. Links are provided in attached letter.

**4. Biography and Release Forms**

I have not received biography or release forms from some of you. If you have not sent these in yet please do so right away. They are attached for your use. Thank you to all of you who have submitted them already.

In summary, the important deadlines are:

August 10 – Provide any changes to your program listing to me as well as biography and release forms if not submitted previously

August 11 – Room reservation needed for discount rate at Little River Casino Resort

August 22 – Golf registration due

August 29 – conference, meal registration at discount rate

September 9 -12 – Conference!

Thank you again for donating your time and talent. If you have any questions, please contact me.

**Barbara E. Marczak, P.E.**

Prein&Newhof

t. 231-798-0101, ext. 1201 f. 231-798-0337

c. 231-670-2497

4910 Stariha Drive | Muskegon, MI 49441

[Website](#) | [Blog](#) | [LinkedIn](#)

***Schedule of Technical Sessions***  
**Michigan Section, AWWA 76<sup>th</sup> Annual Conference**  
**September 9-12, 2014 – Little River Casino Resort, Manistee, Michigan**

**Opening General Session – Wednesday, September 10, 2014 – Ojibwe/Bodweaadamiinh Room**

**Moderators:**

8:00 - 8:15 am	<b>Welcome and Opening Remarks</b> Tom Smith, Chair, MI-AWWA
8:15 – 9:00 am (0.075 CECs – Managerial)	<b>Managing Regional Water Use in the Great Lakes – St. Lawrence Basin</b> David Naftzger, Executive Director of the Council of Great Lakes Governors Chicago, IL
9:00 - 9:30 am (0.05 CECs – Managerial)	<b>MDEQ and the Great Lakes</b> Jon Allan, Office of Great Lakes, MDEQ Lansing, MI
9:30 - 10:00 am (0.05 CECs – Managerial)	<b>Water Research Foundation Highlights</b> Rob Renner, P.E., Executive Director, Water Research Foundation Denver, CO
10:00 - 11:30 am (0.1 CECs – Other)	<b>Vendor Exhibits Open</b>

**Afternoon General Session – Wednesday, September 10, 2014 – Ojibwe/Bodweaadamiinh Room**

**Moderators:**

1:30 - 2:00 pm	<b>AWWA Visitor</b> Stephen Shoaf, Vice President (2013-2014) American Water Works Association
2:00 - 2:30 pm (0.05 CECs – Technical)	<b>DWSD Update</b> Sue McCormick, Detroit Water & Sewerage Department Detroit, MI
2:30 - 3:30 pm (0.1 CECs – Technical)	<b>Frozen – The Winter of 2013-2014</b> Panel Presentation from Four Communities
3:30 - 4:00 pm	<b>Proven Success: Improving Health of Rural Indigenous Ecuadorian Communities through Sustainable Water Supplies</b> Presented by Safe Water in Ecuador Committee

**Afternoon Exhibit Hall Training Session – Wednesday, September 10, 2014 – Event Center**

1:30 - 6:30 pm	<b>Vendor Exhibits Reopen – Event Center</b>
1:30 - 2:00 pm (0.05 CECs – Technical)	<b>Automated Meter Reading Options</b> Etna Supply
2:00 - 2:30 pm (0.05 CECs – Technical)	<b>Backflow Device Assemblies &amp; Applications</b> Hydro Designs
2:30 - 3:00 pm (0.05 CECs – Technical)	<b>Construction Procedures: Prestressed Wire Wound Concrete Tanks</b> DN Tanks
3:00 - 3:30 pm (0.05 CECs – Technical)	<b>Turbine Well Pump Design and Assembly</b> Peerless-Midwest, Inc.
3:30 – 4:00 pm (0.05 CECs – Technical)	<b>Update on Corrosion Control for Ductile Iron Pipe</b> Ductile Iron Pipe Association
3:30 – 6:30 pm	<b>Vendor Exhibits continue</b>



**Morning Session A – Thursday, September 11, 2014 – Odawa Room****Moderators:**

7:45 - 8:00 am	<b>Michigan Section AWWA Annual Business Meeting</b> Tom Smith, Chair Michigan Section, AWWA
8:00 - 8:05 am	<b>2014 Best Tasting Water in Michigan Presentation</b> Gary Wozniak, MDEQ Kalamazoo, MI
8:05 - 8:15 am	<b>Michigan Section AWWA Update</b> Tom Smith, Chair
8:15 - 8:45 am (0.05 CECs – Technical)	<b>DEQ Observations – Surface Water Treatment Operational Concerns</b> Brian Thurston, P.E. & Jon Bloemker, P.E., MDEQ
8:45 - 9:15 am (0.05 CECs – Technical)	<b>Evolution of Gravity Filter Underdrain</b> Tom Getting, P.E., Leopold, a Xylem Brand Zelienople, PA
9:15 - 9:45 am (0.05 CECs – Technical)	<b>Traverse City Water Treatment Plant – Filter #4 Failure and Rehabilitation</b> Art Krueger, P.E., Traverse City Traverse City, MI
9:45 - 10:00 am	<b>Break</b>
10:00 - 10:30 am (0.05 CECs – Technical)	<b>Occurrence of Emerging Contaminants in Drinking Water Materials and Chemicals</b> Dave Purkiss, NSF International Ann Arbor, MI
10:30 - 11:00 am (0.05 CECs – Technical)	<b>Design Considerations for Fixed Bed GAC Systems Treating Low Level cVOCs</b> Zeyad Ahmed and Dr. David Hand, Michigan Technological University Houghton, MI
11:00 - 11:30 am (0.05 CECs – Technical)	<b>Ultrafiltration Membrane Module Virus Reduction at Different Fluxes, and With a Cut Fiber</b> C. Bruce Bartley, NSF International Ann Arbor, MI

**Morning Session B – Thursday, September 11, 2014 – Ojibwe Room****Moderators:**

8:15 - 8:45 am (0.05 CECs – Technical)	<b>Asset Management Plan Development and Gap Analysis</b> Katie Erickson, City of Wyoming Wyoming, MI
8:45 - 9:15 am (0.05 CECs – Managerial)	<b>Pipeline Condition Assessment - A Foundation for Asset Management</b> David Koch, P.E., Black and Veatch Chicago, IL
9:15 - 9:45 am (0.05 CECs – Managerial)	<b>Smart Water Tools – Managing Your Assets through Data Intelligence</b> Carrie Cox, P.E. Oakland County Water Resource Commissioner's Office Waterford, MI
9:45 - 10:00 am	<b>Break</b>
10:00 - 10:30 am (0.05 CECs – Managerial)	<b>Program/Asset Management for Water Distribution Systems</b> Jennifer Drinan and Jared Buzo, Greeley and Hansen Detroit, MI
10:30 - 11:00 am (0.05 CECs – Managerial)	<b>Creating Resilient and Sustainable Critical Infrastructure</b> Michael Steinle, ARCADIS Lenexa, Kansas
11:00 - 11:30 am (0.05 CECs – Managerial)	<b>Cyber Security Trends and Strategies for More Resilient Plant Control Systems</b> Steve Liebrecht, Rockwell Automation Troy, MI

**Afternoon Session A – Thursday, September 11, 2014 – Odawa Room****Moderators:**

1:30 - 2:00 pm (0.05 CECs – Technical)	<b>A New Michigan WTP in Bay County</b> Tom Paige, Bay County Dept. of Water and Sewer Bay City, MI Mark TenBrock, P.E., CDM Smith Detroit, MI
2:00 - 2:30 pm (0.05 CECs – Technical)	<b>A History: Why Genesee County &amp; City of Flint Changed Water Source</b> David Jansen, Genesee County Drain Commission Flint, MI Michael H. Winegard, P.E., AECOM Chicago, IL
2:30 - 3:00 pm (0.05 CECs – Technical)	<b>Lansing BWL: Rehabilitation of Wise Road Water Plant</b> David Baar, P.E., Fishbeck, Thompson, Carr & Huber Grand Rapids, MI Rick Griffith, Lansing Board of Water and Light Lansing, MI
3:00 - 3:30 pm	<b>Break</b>
3:30 - 4:00 pm (0.05 CECs – Technical)	<b>Anchor's Away: The City of Marysville's Challenge of Providing a Reliable Water Supply from the St. Clair River Shipping Channel</b> Trevor Wagenmaker, P.E., HRC Bloomfield Hills, MI Bari Wrubel, City of Marysville Marysville, MI
4:00 - 4:30 pm (0.05 CECs – Technical)	<b>Emergency Rehabilitation of Critical 24-Inch Water Supply Line – Ann Arbor</b> Chris Elenbass, P.E., Stantec Ann Arbor, MI Brian Steglitz, P.E., City of Ann Arbor Ann Arbor, MI
4:30 - 5:00 pm (0.05 CECs – Technical)	<b>Geotechnical Techniques for Water Infrastructure Projects</b> Brian Phillips, P.E., Process Engineer, Fishbeck, Thompson, Carr & Huber Grand Rapids, MI

**Afternoon Session B – Thursday, September 11, 2014 – Ojibwe Room****Moderators:**

1:30 - 2:00 pm (0.05 CECs – Managerial)	<b>Hazard Analysis and Critical Control Point (HACCP) Methodology for Building Water Systems</b> Carolyn Gilliland, NSF International Ann Arbor, MI
2:00 - 2:30 pm (0.05 CECs – Technical)	<b>Cross Connection Control – Residential Water Customers and Associated Risks</b> Paul Patterson, Hydro Designs, Inc. Troy, MI
2:30 - 3:00 pm (0.05 CECs – Managerial)	<b>Safety and the Changing Technology: Make Your Tablet Work for You</b> Heather Kubiak, City of Wyoming Wyoming, MI
3:00 - 3:30 pm	<b>Break</b>
3:30 - 4:00 pm (0.05 CECs – Technical)	<b>Efficient Operation of Pumping Equipment for Energy and Cost Savings</b> Bob Masters, Peerless- Midwest, Inc. Ionia, MI
4:00 - 4:30 pm (0.05 CECs – Managerial)	<b>Data Solutions for Effective Utility Management &amp; Progression Towards Smart City Implementation</b> Tim Murphy, Schneider Electric Broadview Heights, MI
4:30 - 5:00 pm (0.05 CECs – Technical)	<b>Operator's Little Helper: A Reference Tool for Optimizing Pumping Efficiency</b> Benjamin Whitehead, P.E., Black & Veatch Grand Rapids, MI

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**Closing General Session – Friday, September 12, 2014 – Ojibwe/Bodweaadamiinh Room**

**Moderators:**

7:00 - 8:15 am	<b>AWWA Roundtable/Committee Chairs Breakfast</b>
8:30 - 9:00 am (0.05 CECs – Technical)	<b>MDEQ Update</b> Richard Benzie, P.E., Chief, Field Operations Section, Office of Drinking Water and Municipal Assistance Lansing, MI
9:00 - 9:30 am (0.05 CECs – Managerial)	<b>Climate Change and the Great lakes</b> Dr. Alan Steinman, Grand Valley State University Water Resources Institute Muskegon, MI
9:30 - 10:00 am (0.05 CECs – Technical)	<b>News from the Field</b> Presented by MI-AWWA Young Professionals Committee
10:00 - 10:15 am	<b>Break</b>
10:15 - 10:45 am (0.05 CECs – Managerial)	<b>The Simple Complexity of Saving Money with Storage and SCADA</b> Vicki Putala, P.E. Orchard, Hiltz & McCliment, Inc. Livonia, MI Carrie Cox, P.E., Oakland County Water Resource Commissioner's Office Waterford, MI Karen Mondora, P.E., City of Farmington Hills, MI
10:45 - 11:15 am (0.05 CECs – Technical)	<b>Energy Recovery Turbines for Conduit Hydropower Applications</b> Sanjeev Verma, Fluid Development Equipment Company Monroe, MI
11:15 - 11:45 am (0.05 CECs – Managerial)	<b>Intelligent Water and Organization Culture</b> Terry Biederman, P.E., Johnson and Anderson Engineers Waterford, MI

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, September 25, 2014 9:48 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Flint Drinking Water Issues

Thanks – Stephen called me this morning and said he would be there. Your call – but you are more than welcome to attend. Thanks.

Mary Beth

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

-----Original Appointment-----

**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, September 25, 2014 9:15 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** Accepted: Flint Drinking Water Issues  
**When:** Thursday, September 25, 2014 11:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).  
**Where:** CH-6S-DEQ-DIRECTOR

I will attend if needed – which probably depends if Steve Busch is available.

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, September 25, 2014 10:05 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Flint Drinking Water Issues

Sounds good – thanks.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

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**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, September 25, 2014 10:03 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** RE: Flint Drinking Water Issues

Steve just explained more about the purpose of the meeting and that it was to discuss more than just the current status of the Flint water supply including possible focuses for the Mott Foundation, so I will plan to attend.

Richard

Richard Benzie, P.E., Acting Chief  
Field Operations Section  
Office of Drinking Water and Municipal Assistance, MDEQ  
517-284-6512

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, September 25, 2014 9:48 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Flint Drinking Water Issues

Thanks – Stephen called me this morning and said he would be there. Your call – but you are more than welcome to attend. Thanks.

Mary Beth

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

-----Original Appointment-----

**From:** Benzie, Richard (DEQ)

**Sent:** Thursday, September 25, 2014 9:15 AM

**To:** Thelen, Mary Beth (DEQ)

**Subject:** Accepted: Flint Drinking Water Issues

**When:** Thursday, September 25, 2014 11:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).

**Where:** CH-6S-DEQ-DIRECTOR

I will attend if needed – which probably depends if Steve Busch is available.

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**From:** Donaldson, Kristina (DEQ)  
**Sent:** Tuesday, October 06, 2015 10:51 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Brown Bag - October 8, 11AM - 1PM

Nevermind..Sorry .. I just realized it was Thursday ☺

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**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, October 05, 2015 6:41 PM  
**To:** Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Lachance, Amy (DEQ); Thomas, Chuck (DEQ)  
**Cc:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ); Monosmith, Carrie (DEQ); Butler, Sonya (DEQ); Green, Kelly (DEQ); Fitzner, Wendy (DEQ); Hoeh, Jeremy (DEQ); Philip, Kris (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Brown Bag - October 8, 11AM - 1PM

Just a quick heads up that we are arranging a brown bag session for ODWMA employees in an attempt to explain what is happening with Flint.

I know it is short notice, but we have reserved the ConCon Room for Thursday at 11:00 AM. We will provide a call-in option for district offices. Hopefully, at least some staff from each district will participate and fill in those who cannot alter their schedules on short notice.

More details about the call-in number will follow as we confirm arrangements and/or they become available. I wanted you to know as soon as we were able to reserve a room.

Richard

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**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, May 24, 2012 2:27 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: City of Flint DWRF Application Part 1

Richard,

Unfortunately, it was ...the project also included electrical switchgear upgrades at one major pump station and replacement of pumps at another pump station. I will forward you Valorie and Dave's response to Flint.

MFP

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**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, May 24, 2012 1:56 PM  
**To:** Prysby, Mike (DEQ)  
**Subject:** RE: City of Flint DWRF Application Part 1

You win some, you lose some. Was this the distribution project that Howard Croft mentioned in the meeting a month or so ago for which they were going to be given "forgiveness" for 50% of their loan?

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**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, May 24, 2012 1:24 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** FW: City of Flint DWRF Application Part 1

All this work...down the drain..again

MFP

---

**From:** Rick Freeman [<mailto:RFreeman@rowepsc.com>]  
**Sent:** Thursday, May 24, 2012 1:07 PM  
**To:** White, Valorie (DEQ)  
**Cc:** Prysby, Mike (DEQ); Howard Croft; Gerald Ambrose; Daugherty Johnson; Robert Bincsik; Brent Wright; Jeff Markstrom; Dean Oparka  
**Subject:** RE: City of Flint DWRF Application Part 1

Valorie/Mike:

This email is to inform you that the City of Flint has decided not pursue DWRF funding for Project No. 7310-01 for Fiscal Year 2012. Due to the current financial situation that exists in Flint, it is believed that it would not be feasible to pursue the bonding necessary to complete these projects.

We appreciate all the help and support that the MDEQ has given on developing these projects through this program.

The City of Flint hopes that we will be able to reconsider these projects under this or another program for funding in the future.



If you have any questions/concerns or need any additional information from the City of Flint please do not hesitate to contact me directly.

Rick Freeman, P.E.  
City Engineer



City of Flint  
1101 S. Saginaw St.  
Flint, MI 48502

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**From:** White, Valorie (DEQ) [<mailto:WHITEV1@michigan.gov>]  
**Sent:** Thursday, May 24, 2012 11:50 AM  
**To:** Rick Freeman  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** RE: City of Flint DWRP Application Part 1

Rick,

We can accept an electronic copy, as a place holder, with the original document to follow in the mail. However, the electronic copy must be signed and in my email by close of business today. Good luck.

Valorie White  
Project Manager  
DEQ RMD  
Revolving Loan Section  
Phone: (517) 335-7267  
Fax: (517) 335-0743  
[whitev1@michigan.gov](mailto:whitev1@michigan.gov)

---

**From:** Rick Freeman [<mailto:RFreeman@rowepsc.com>]  
**Sent:** Thursday, May 24, 2012 11:15 AM  
**To:** White, Valorie (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** City of Flint DWRP Application Part 1

Valorie,

I am working with Jeff Markstrom in pulling the information needed to complete the application referenced above.

Will we be able to email the application to you today to meet the deadline and follow up via mail the original document?

We are having difficulties in getting time with the Emergency Financial Manager, Mike Brown, for him to sign and get this out the door.

Before he signs he has to get State Treasury approval.

We are working our best to get this to you under the deadline.

Thank you for your consideration.

Rick Freeman, P.E.

City Engineer



City of Flint

1101 S. Saginaw St.

Flint, MI 48502

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**From:** Butler, Sonya (DEQ)  
**Sent:** Thursday, May 24, 2012 2:40 PM  
**To:** Barton, John (Treasury)  
**Cc:** Browne, Elizabeth (DEQ); White, Valorie (DEQ); Worthington, David (DEQ); Benzie, Richard (DEQ)  
**Subject:** Flint

John

We had an email from Flint earlier today, declining DWRF funding for the current fiscal year due to their current financial status. I have asked my staff to determine if the project can be reduced in scope (currently water main and pump station) & cost such that it is easier to finance a project this fiscal year. In our opinion, the scope can be reduced. Thus, further discussion is necessary with the city's engineer and staff regarding this option. This may require additional time to get the Part I application submitted (today is the deadline). Our expectation is to provide principal forgiveness to this project as Flint qualifies as a disadvantaged status community. The original project estimate was \$13 million with approximately \$5 million expected as principal forgiveness.

The EFM in Flint has to clear projects requiring bond financing with Treasury. I wanted to alert you to the situation so that you can ensure that the appropriate staff in Treasury have complete information regarding the project.

Sonya T. Butler, Section Chief  
Revolving Loan Section  
Resource Management Division  
Michigan Department of Environmental Quality  
525 W. Allegan Street, Lansing, MI 48933  
p: 517.373.4737 f: 517.335.0743

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**From:** Poy, Thomas <poy.thomas@epa.gov>  
**Sent:** Thursday, May 29, 2014 3:57 PM  
**To:** Crooks, Jennifer;Prysby, Mike (DEQ)  
**Cc:** Benzie, Richard (DEQ)  
**Subject:** RE: Flint

Hi Mike: Since Jennifer is out, I got to speak to Mr. Jefferson about Flint's water causing rashes. Jennifer showed me the Phase 2/5 test results from July 2013. Are there more recent results on the water currently served to the customers? Rashes can be caused by other changes in water chemistry due to the change in source waters but the first step would be to rule out regulated contaminants. Sorry, I'm sure you've already gone over this with Jennifer.

Thanks.

Tom

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Tom Poy  
Chief, Ground Water and Drinking Water Branch  
USEPA - Region 5  
(312) 886-5991

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**From:** Crooks, Jennifer  
**Sent:** Wednesday, May 28, 2014 3:03 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Poy, Thomas  
**Subject:** Flint

Thank you again, Mike, for talking to me about the Flint water issue. I really like your idea of encouraging the City to do some customer service with the citizens that are complaining about the water. Flushing their line and/or taking a sample at the citizen's house might go a long way to calming people down.

I was also thinking about you doing a chain of custody sample at the plant. I know you trust Brent the operator; but this could be another response to customer complaints to instill trust in the water department. It wouldn't have to be compliance sampling; a special purpose sample perhaps.

Something else I thought of—Ohio is having issues of blue-green algae/cyanotoxins in some of its surface waters, which are related to taste and odor, and can cause rashes; pretty nasty stuff. Don Moore said that the Flint River does have a lot of algae growing on it. See the email below, with some websites on the issue of cyanotoxins in drinking water

The person at Ohio EPA that has dealt with blue-green algae/cyanotoxins in drinking water is Heather Raymond. She might be a good resource to discuss whether it would be worth sampling and analyzing for cyanotoxins in the Flint finished water.

FYI, Don Moore said he was organizing a protest picket line in his neighborhood at the water treatment plant.

Jennifer

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**From:** Drake, Wendy  
**Sent:** Wednesday, May 28, 2014 2:39 PM  
**To:** Crooks, Jennifer  
**Subject:** HABs info

Hi, Jennifer.

Here are a few HABs websites. Both Ohio and Illinois have taken samples at systems and sources where problems have been reported, and I'm not sure about the other states.

**U.S. EPA cyanobacterial HABs website:** <http://www2.epa.gov/nutrient-policy-data/cyanobacterial-harmful-algal-blooms-cyanohabs>; Lesley D'Anglada from the EPA Office of Water's Office of Science and Technology also sends out HABs news updates that people can sign up for by contacting her (see forwarded e-mail below)

**Ohio EPA's HABs—information for PWSs website:** <http://epa.ohio.gov/ddagw/HAB.aspx>; Ohio EPA has a PWS HAB response strategy (<http://epa.ohio.gov/Portals/28/documents/HABs/PWSHABResponseStrategy.pdf>) in which they list Heather Raymond as the PWS HAB Coordinator—her contact information is [heather.raymond@epa.ohio.gov](mailto:heather.raymond@epa.ohio.gov) and (614) 644-2911. Ohio has experienced the most problems in our region.

**Illinois EPA's HABs and algal toxins website:** <http://epa.state.il.us/water/algal-bloom/index.html>; Illinois just launched this program last summer

**IDEM's blue-green algae website:** <http://www.in.gov/idem/algae/>

**MDH's blue-green algal blooms and microcystin website:**  
<http://www.health.state.mn.us/divs/eh/hazardous/topics/bluegreenalgae.html>

**WDNR's blue-green algae website:** <http://dnr.wi.gov/lakes/bluegreenalgae/?a=1>

Please let me know if you have any questions.

Wendy

Wendy Drake | U.S. EPA, Region 5, Water Division, Ground Water and Drinking Water Branch  
77 West Jackson Boulevard, WG-15J | Chicago, IL 60604 | 312-886-6705 | [drake\\_wendy@epa.gov](mailto:drake_wendy@epa.gov)

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**From:** DAnglada, Lesley  
**Sent:** Tuesday, May 27, 2014 5:48 AM  
**To:** DAnglada, Lesley  
**Subject:** HABs News - May 2014

## *News*

### **EPA's Webinar: Prevention, Control and Mitigation of Cyanobacteria and Cyanotoxins**

EPA's Office of Science and Technology conducted a webinar on Wednesday, May 14th, on the Prevention, Control and Mitigation of cyanobacteria and cyanotoxins. The presentations are posted on the Control and Treatment tab at the CyanoHABs web page: <http://www2.epa.gov/nutrient-policy-data/cyanobacterial-harmful-algal-blooms-cyanohabs> and the audio recording is available here: <https://epa.connectsolutions.com/pl17lociigbi/>

### **House Science Panel OKs Bill to Enhance Research, Control Efforts for Algae Blooms**

A House committee approved by voice vote May 21 the *Harmful Algal Bloom and Hypoxia Research and Control Amendments Act* (S. 1254) to authorize a national strategy of research, mitigation and control for algal blooms that kill

fish and shellfish by depleting oxygen in marine and freshwater bodies. The bill was approved by the Senate in February. It still must make it through the House Natural Resources Committee before it can go to the full House.

[http://news.bna.com/deln/DELNWB/split\\_display.adp?fedfid=47002944&vname=denotallissues&jd=a0f0u7h9x7&split=0](http://news.bna.com/deln/DELNWB/split_display.adp?fedfid=47002944&vname=denotallissues&jd=a0f0u7h9x7&split=0)

### **Taking the fight to Lake Erie algal blooms before they reach Western New York**

Government officials and environmentalists in Buffalo aim at stopping toxic blue-green algae in Lake Erie before it reaches Western New York. They called for a two-pronged federal approach involving the U.S. Environmental Protection Agency and U.S. Department of Agriculture.

<http://www.buffalonews.com/city-region/environment/taking-the-fight-to-lake-erie-algal-blooms-before-they-reach-western-new-york-20140505>

### **Sea Otter's Scourge**

Microcystin stalks marine mammals off the coast of California and kills dogs and cats further inland.

<http://www.the-scientist.com/?articles.view/articleNo/39864/title/Sea-Otter-s-Scourge/>

### **Climate change brings mostly bad news for Ohio**

Scientists delivered a mostly negative forecast for how climate change will affect Ohioans during the next year or so, and well beyond

<http://phys.org/news/2014-05-climate-bad-news-ohio.html>

### **Blue-green algae in Kansas water**

Warnings and Advisories in place from the previous sampling season.

<http://kansasfirstnews.com/2014/05/22/blue-green-algae-in-kansas-water/>

## ***New Research***

### **Land use patterns, ecoregion, and microcystin relationships in U.S. lakes and reservoirs: A preliminary evaluation (attached)**

John R. Beaver, Erin E. Manis, Keith A. Loftin, Jennifer L. Graham, Amina I. Pollard, and Richard M. Mitchell

Harmful Algae, Volume 36, June 2014, Pages 57-62, ISSN 1568-9883

<http://www.sciencedirect.com/science/article/pii/S1568988314000444>

### **Survival, growth and toxicity of Microcystis aeruginosa PCC 7806 in experimental conditions mimicking some features of the human gastro-intestinal environment**

Mara Stefanelli, Susanna Vichi, Giuseppe Stipa, Enzo Funari, Emanuela Testai, Simona Scardala, Maura Manganelli, Chemico-Biological Interactions, Volume 215, 25 May 2014, Pages 54-61, ISSN 0009-2797

<http://www.sciencedirect.com/science/article/pii/S0009279714000830>

### **Rapid quantitative analysis of microcystins in raw surface waters with MALDI MS utilizing easily synthesized internal standards**

Amber F. Roegner, Macarena Pérez Schirmer, Birgit Puschner, Beatriz Brena, Gualberto Gonzalez-Sapienza, Toxicon, Volume 78, February 2014, Pages 94-102, ISSN 0041-0101

<http://www.sciencedirect.com/science/article/pii/S0041010113004637>

### **Cyanotoxin occurrence and potentially toxin producing cyanobacteria in freshwaters of Greece: A multi-disciplinary approach**

Spyros Gkelis, Nikos Zaoutsos, Toxicon, Volume 78, February 2014, Pages 1-9, ISSN 0041-0101

<http://www.sciencedirect.com/science/article/pii/S0041010113004388>

### **Investigating the production and release of cylindrospermopsin and deoxy-cylindrospermopsin by Cylindrospermopsis raciborskii over a natural growth cycle**

Timothy W. Davis, Philip T. Orr, Gregory L. Boyer, Michele A. Burford, Harmful Algae, Volume 31, January 2014, Pages 18-25, ISSN 1568-9883

<http://www.sciencedirect.com/science/article/pii/S1568988313001364>

**Status, causes and controls of cyanobacterial blooms in Lake Erie**

Morgan M. Steffen, B. Shafer Belisle, Sue B. Watson, Gregory L. Boyer, Steven W. Wilhelm, Journal of Great Lakes Research, Available online 25 January 2014, ISSN 0380-1330

<http://www.sciencedirect.com/science/article/pii/S0380133013001913>

**Cylindrospermopsis raciborskii dominates under very low and high nitrogen-to-phosphorus ratios**

Michael F. Chislock, Katherine L. Sharp, Alan E. Wilson, Water Research, Volume 49, 1 February 2014, Pages 207-214, ISSN 0043-1354, <http://www.sciencedirect.com/science/article/pii/S0043135413009330>

**Acute, chronic and reproductive toxicity of complex cyanobacterial blooms in Daphnia magna and the role of microcystins**

Marie Smutná, Pavel Babica, Sergio Jarque, Klára Hilscherová, Blahoslav Maršálek, Maher Haeba, Ludek Bláha, Toxicon, Volume 79, 1 March 2014, Pages 11-18, ISSN 0041-0101

<http://www.sciencedirect.com/science/article/pii/S0041010113004650>

**A nanosensor based on quantum-dot haptens for rapid, on-site immunoassay of cyanotoxin in environmental water**

Long Feng, Anna Zhu, Hongchen Wang, Hanchang Shi, Biosensors and Bioelectronics, Volume 53, 15 March 2014, Pages 1-4, ISSN 0956-5663, <http://www.sciencedirect.com/science/article/pii/S0956566313006362>

**Inductive reasoning and forecasting of population dynamics of Cylindrospermopsis raciborskii in three subtropical reservoirs by evolutionary computation**

Friedrich Recknagel, Philip T. Orr, Hongqing Cao, Harmful Algae, Volume 31, January 2014, Pages 26-34, ISSN 1568-9883,

<http://www.sciencedirect.com/science/article/pii/S1568988313001339>

*For more information please visit the Cyanobacterial HABs website at <http://www2.epa.gov/nutrient-policy-data/cyanobacterial-harmful-algal-blooms-cyanohabs>*

*Lesley V. D'Anglada, Dr.PH, MEH*

*U.S. Environmental Protection Agency*

*Office of Science and Technology, Office of Water*

*1200 Pennsylvania Ave., N.W. (MC 4304T)*

*Washington, DC 20460*

*Phone: 202-566-1125*

*Fax: 202-566-1140*

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**From:** Rennaker, Joanne (DEQ)  
**Sent:** Wednesday, September 09, 2015 2:56 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** Scanned Flint test results  
**Attachments:** ACLU FOIA - Lab Results for Flint.pdf; ACLU FOIA 6123-15 - Lead & Copper Flint.pdf

Per your request.

Jo Anne Rennaker  
Secretary  
Office of Waste Management and Radiological Protection  
Office of Drinking Water and Municipal Assistance  
517-284-6643



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF68790**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3811 BRENTWOOD DR, FLINT  
Collected By: REID SANDERS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/14/2015 09:35  
Date Received: 06/19/2015 11:02  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.042	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF63410

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 631 ALVORD AVE, FLINT  
Collected By: JANICE BERRYMAN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/06/2015 07:00  
Date Received: 05/13/2015 11:26  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	05/14/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.042	05/14/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



**Sample Number**

**LF68793**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1150 WOODSIDE DR, FLINT  
Collected By: DEBORAH CONRAD  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/14/2015 07:30  
Date Received: 06/19/2015 11:02  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.029	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF63411**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 216 BROWNING AVE, FLINT  
Collected By: DEB  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/07/2015 08:00  
Date Received: 05/13/2015 11:26  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.31	05/14/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.022	05/14/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF68023**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1807 OREN AVE, FLINT	Source:	Single Family Dwelling
Collected By:	MARK RUSSEL	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/08/2015 07:30
Sample Point:	BATHROOM	Date Received:	06/16/2015 11:11
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/17/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.021	06/17/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF68794**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 547 COPEMAN BLVD, FLINT  
Collected By: LINDA LEE  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/14/2015 09:00  
Date Received: 06/19/2015 11:02  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.018	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



Sample Number  
LF57728

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1224 DECKER ST, FLINT  
Collected By: LOU ANNE MALIS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/17/2015 06:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.013	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF70230

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1205 BLANCHARD AVE, FLINT	Source:	Single Family Dwelling
Collected By:	JOEL ARNOLD	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/24/2015 06:30
Sample Point:	KITCHEN	Date Received:	06/30/2015 11:14
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.05	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.011	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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TEL: (517) 335-8184  
FAX: (517) 335-8562



Sample Number  
LF70222

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 721 EAST ST APT #2, FLINT  
Collected By: MELANIE POISSON  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/25/2015 06:30  
Date Received: 06/30/2015 11:14  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.16	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.010	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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FAX: (517) 335-8562



Sample Number  
LF54946

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1809 STEVENSON ST, FLINT  
Collected By: MIKE TAYLOR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN SINK  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 02/10/2015 06:30  
Date Received: 02/19/2015 11:13  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	02/20/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.010	02/20/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY**

**DRINKING WATER LABORATORY**

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P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



**Sample Number**

**LF56223**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 4202 CUSTER AVE, FLINT  
Collected By: JACQUELINE PEMBERTON  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/04/2015 08:00  
Date Received: 03/06/2015 11:33  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.27	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF56225

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 401 E NEWALL ST, FLINT  
Collected By: MARK CROMWELL SR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Other  
Date Collected: 03/02/2015 09:30  
Date Received: 03/06/2015 11:33  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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FAX: (517) 335-8562



**Sample Number**  
**LF56227**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2615 TRUMBULL AVE, FLINT  
Collected By: JENNIFER PEDERSON  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 02/27/2015 10:00  
Date Received: 03/06/2015 11:33  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.**  
**630 South Saginaw**  
**Flint, MI 48502-1540**  
**810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No: MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF54663

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2205 FLUSHING RD, FLINT  
Collected By: CHRIS BEATENHEAD  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Public Water Supply Operator  
Date Collected: 02/15/2015 06:00  
Date Received: 02/17/2015 10:47  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.13	02/18/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	02/18/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

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DRINKING WATER LABORATORY

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P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF57730



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1220 DECKER ST, FLINT  
Collected By: CARMEN PULIDO  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/17/2015 06:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF57731



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1379 WASHINGTON, FLINT  
Collected By: ROXANNE PUTMAN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/19/2015 08:30  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.008	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztlan





MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57733

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1372 WASHINGTON AVE, FLINT  
Collected By: ANTHONY PALLADENO JR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/19/2015 08:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57734

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1383 WASHINGTON AVE, FLINT  
Collected By: ANTHONY PALLADENO III  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/19/2015 08:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.17	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U. S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



Sample Number  
LF57735

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1367 WASHINGTON AVE, FLINT  
Collected By: LEAH PALLADENO  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/17/2015 06:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.001	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krsztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57736

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1701 MARQUETTE DR, FLINT  
Collected By: CHARMA DOMPREEH  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/14/2015 09:40  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.19	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.001	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF58413

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 778 E BUNDY AVE, FLINT  
Collected By: SANDRA HULL  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/24/2015 06:25  
Date Received: 03/31/2015 11:11  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	04/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	04/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kriszian

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

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P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



Sample Number

LF58414

### Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3714 BEECHER RD, FLINT  
Collected By: MELISSA MAYS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/24/2015 06:30  
Date Received: 03/31/2015 11:11  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.52	04/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	04/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF59749

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1016 INGLESIDE AVE, FLINT  
Collected By: JAMES D JARVIS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/09/2015 07:00  
Date Received: 04/14/2015 11:07  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.07	04/15/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	04/15/2015	0.001	0.015	EPA 200.8	7439-92-1

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Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF59750

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1818 ROCK CREEK LN, FLINT  
Collected By: HELEN HUNTER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/06/2015 06:50  
Date Received: 04/14/2015 11:07  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	04/15/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	04/15/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztfian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



Sample Number  
LF59751

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3010 CHEYENNE ST, FLINT  
Collected By: GERTRUDE MARSHALL  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/03/2015 08:50  
Date Received: 04/14/2015 11:07  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	04/15/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	04/15/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1640  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF60546**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2606 MOUNTAIN AVE, FLINT  
Collected By: MARIBETH PEREZ  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/15/2015 12:00  
Date Received: 04/21/2015 10:41  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	04/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	04/22/2015	0.001	0.015	EPA 200.8	7439-92-1

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**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF61845

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2020 CROOKED LN, FLINT  
Collected By: TRACY & MIKE SARGENT  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/24/2015 07:00  
Date Received: 05/04/2015 10:21  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	05/05/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	05/05/2015	0.001	0.015	EPA 200.8	7439-92-1

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630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

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MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian



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DRINKING WATER LABORATORY

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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF61846

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 310 E MOORE ST, FLINT  
Collected By: HUSTON BOLDEN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/22/2015 07:00  
Date Received: 05/04/2015 10:21  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	05/05/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	05/05/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF64283

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3714 BEECHER RD, FLINT  
Collected By: MELISSA MAYS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/14/2015 06:00  
Date Received: 05/20/2015 11:24  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.15	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.008	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



Sample Number  
LF64285

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 912 LEXINGTON AVE, FLINT  
Collected By: LAURA HATT  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/15/2015 09:00  
Date Received: 05/20/2015 11:24  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF67423



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 344 ROBBIE LN, FLINT  
Collected By: CASSANDRA BROWN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/31/2015 08:15  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

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TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF67424**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 357 ROBBIE LN, FLINT  
Collected By: FRANK EVANS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/31/2015 08:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.20	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian





MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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FAX: (517) 335-8562

Sample Number  
LF67425

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 328 ROBBIE LN, FLINT  
Collected By: WILLIE TURNER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/30/2015 06:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.09	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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TEL: (517) 335-8184  
FAX: (517) 335-8562



Sample Number  
LF67427

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 353 ROBBIE LN, FLINT  
Collected By: ZETAN EVANS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/30/2015 06:45  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF67428

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 349 ROBBIE LN, FLINT  
Collected By: DORIS NUNN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/31/2015 08:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF68792**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	853 E 7TH ST, FLINT	Source:	Single Family Dwelling
Collected By:	LAURA STUDACHER	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/12/2015 06:30
Sample Point:	BATHROOM	Date Received:	06/19/2015 11:02
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.07	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

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**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF68791**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1615 S FRANKLIN AVE, FLINT  
Collected By: VIVAN GRIER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/14/2015 09:45  
Date Received: 06/19/2015 11:02  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

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**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

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MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF68788**

**Official Laboratory Report**

Report To: **MIKE GLASGOW**  
**4500 N DORT HWY**  
**FLINT MI 48505**

System Name/Owner: **CITY OF FLINT**  
Collection Address: **421 LYON ST, FLINT**  
Collected By: **SAMUEL J CONDE**  
Township/Well#/Section: **//**  
County: **Genesee**  
Sample Point: **KITCHEN**  
Water System: **Treated Public Distribution System**

WSSN/Pool ID: **2310**  
Source: **Single Family Dwelling**  
Site Code:  
Collector: **Private Citizen**  
Date Collected: **06/14/2015 08:34**  
Date Received: **06/19/2015 11:02**  
Purpose: **Routine Monitoring**

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.**  
**630 South Saginaw**  
**Flint, MI 48502-1540**  
**810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

**Sample Number**

**LF68789**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1528 DELAWARE AVE, FLINT  
Collected By: CAROL PARKER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/12/2015 05:23  
Date Received: 06/19/2015 11:02  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

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MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF69622

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 920 STOCKER AVE, FLINT  
Collected By: MICHAEL TAYLOR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/21/2015 10:30  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.001	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



Sample Number

LF69623

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 742 LINCOLN AVE, FLINT  
Collected By: DANA STIF  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/19/2015 07:00  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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FAX: (517) 335-8562

Sample Number  
LF69624

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3517 BENNETT AVE, FLINT  
Collected By: RANDOLPH FREEMAN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/24/2015 05:05  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.06	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

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810 257-3603

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AL: Action Level  
RL: Reporting Limit

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CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

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FAX: (517) 335-8562



Sample Number  
LF69625

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1730 OVERHILL DR, FLINT  
Collected By: PETER M BADE  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/22/2015 05:30  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.08	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.001	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

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AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

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Sample Number

LF69626

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2117 STANFORD AVE, FLINT  
Collected By: CHIMENE HILL  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/23/2015 08:20  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.08	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

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AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
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MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Sample Number  
LF69627

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2432 BETA LN, FLINT  
Collected By: JON KINGEN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/21/2015 07:00  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

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AL : Action Level  
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mg/L : milligrams / Liter (ppm)  
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MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Sample Number  
LF69628

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2023 MILLER RD, FLINT  
Collected By: CAROL A HIGGINS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/21/2015 11:00  
Date Received: 06/25/2015 11:52  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.06	06/26/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	06/26/2015	0.001	0.015	EPA 200.8	7439-92-1

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810 257-3603

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AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Sample Number  
LF70223

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3814 WHITTIER, FLINT  
Collected By: BRIAN URCH  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/25/2015 07:33  
Date Received: 06/30/2015 11:14  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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810 257-3603

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MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Sample Number  
LF70224

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	3120 NORWOOD DR, FLINT	Source:	Single Family Dwelling
Collected By:	TOM HUTCHINGS	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/24/2015 06:20
Sample Point:	BATHROOM	Date Received:	06/30/2015 11:14
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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630 South Saginaw  
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810 257-3603

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MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian





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Sample Number  
LF70225

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2122 PIERCE ST, FLINT	Source:	Single Family Dwelling
Collected By:	KATHLEEN REID	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/21/2015 07:00
Sample Point:	KITCHEN	Date Received:	06/30/2015 11:14
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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810 257-3603

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AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Sample Number  
LF70226

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3521 BENNETT AVE, FLINT  
Collected By: BRENT WRIGHT  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/25/2015 06:35  
Date Received: 06/30/2015 11:14  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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810 257-3603

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AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Sample Number  
LF70227

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1602 RASPBERRY LN, FLINT	Source:	Single Family Dwelling
Collected By:	BRAD FARRAR	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/24/2015 07:15
Sample Point:	KITCHEN	Date Received:	06/30/2015 11:14
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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810 257-3603

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AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

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Lansing, MI 48909

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FAX: (517) 335-8562



Sample Number  
LF70228

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1809 LYNBROOK, FLINT  
Collected By: DAWN STEELE  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/26/2015 04:35  
Date Received: 06/30/2015 11:14  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

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MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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FAX: (517) 335-8562

Sample Number  
LF70229

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2112 SHERFF, FLINT	Source:	Single Family Dwelling
Collected By:	KAREN EATON	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/24/2015 09:30
Sample Point:	KITCHEN	Date Received:	06/30/2015 11:14
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.06	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.009	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF70231

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 860 SCHAFER ST, FLINT  
Collected By: DERRICK JONES  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/26/2015 05:27  
Date Received: 06/30/2015 11:14  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.06	07/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	07/01/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF71158

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2110 FLUSHING RD, FLINT	Source:	Single Family Dwelling
Collected By:	SHELLY SANETRIK	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/30/2015 08:34
Sample Point:	KITCHEN	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

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DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number**  
**LF71159**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2300 FLUSHING RD, FLINT	Source:	Single Family Dwelling
Collected By:	CONSTANCE VAUGHN	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/29/2015 09:30
Sample Point:	BATHROOM	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.28	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number**  
**LF71160**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2130 FLUSHING RD, FLINT	Source:	Single Family Dwelling
Collected By:	ROSARIO	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/28/2015 17:46
Sample Point:	BASEMENT	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.05	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF71162

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2202 FLUSHING RD, FLINT	Source:	Single Family Dwelling
Collected By:	BARBARA NELSON	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/29/2015 06:30
Sample Point:	KITCHEN	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.06	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF71163

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2429 FLUSHING RD, FLINT	Source:	Single Family Dwelling
Collected By:	ROLAND WATSON	Site Code:	
Township/Welt#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/30/2015 08:00
Sample Point:	KITCHEN	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.06	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF71165

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	4013 BROWNELL BLVD, FLINT	Source:	Single Family Dwelling
Collected By:	ADRIAN AND PHYLLIS JONES	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/29/2015 08:30
Sample Point:	KITCHEN	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.08	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

**Sample Number**  
**LF71166**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2414 FLUSHING RD, FLINT	Source:	Single Family Dwelling
Collected By:	MICHELLE AND MICHAEL REED	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/30/2015 07:30
Sample Point:	KITCHEN	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF71167**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1914 PENBROOK LN, FLINT	Source:	Single Family Dwelling
Collected By:	KARL ADKINS	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/29/2015 06:00
Sample Point:	KITCHEN	Date Received:	07/07/2015 11:34
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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TEL: (517) 335-8184  
FAX: (517) 335-8562

**Sample Number**  
**LF71168**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3901 LEERDA ST, FLINT  
Collected By: CARNETTA CARTER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/26/2015 08:25  
Date Received: 07/07/2015 11:34  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270  
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TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF71169

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3142 MCCLURE, FLINT  
Collected By: BOB FARRAR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/26/2015 06:20  
Date Received: 07/07/2015 11:34  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian





MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF71170

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2114 FLUSHING RD, FLINT  
Collected By: DAVID PAVLOVICH  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/29/2015 08:00  
Date Received: 07/07/2015 11:34  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.05	07/08/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	07/08/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY



USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF72033

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 709 FROST ST, FLINT  
Collected By: MAURCICA GUYNN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/30/2015 08:15  
Date Received: 07/10/2015 10:36  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	07/13/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	07/13/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
341 ROBBIE LN  
FLINT MI 48505

Sample Number: LLF67426

Sample/Collection Information:

WSSN:  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 5/31/2015 6:00:00 AM  
Arrival Date: 6/11/2015 10:51:10 AM

Site Code:  
Water Source: Single Family Dwelling  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: FLORISSA STEBBINS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.05	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Tue Aug 4 14:23:55 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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**Owner/Location Information:**

CITY OF FLINT  
215 BROWNING AVE  
FLINT MI 48507

Sample Number: LLF56226

**Sample/Collection Information:**

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 3/2/2015 6:30:00 AM  
Arrival Date: 3/6/2015 11:33:07 AM

Site Code:  
Water Source: Single Family Dwelling  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: KEVIN & JENNIFER STARNES

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.16	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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**Laboratory Comments:**

By authority of PA 368 of 1978 as amended.

Print Date: Tue Aug 4 14:17:25 EDT  
2015



## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

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Owner/Location Information:

CITY OF FLINT  
201 BROWNING AVE  
FLINT MI 48507

Sample Number: LLF56228

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Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 3/5/2015 9:30:00 AM  
Arrival Date: 3/6/2015 11:33:08 AM

Site Code:  
Water Source: Single Family Dwelling  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: FLOYD BELL

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Tue Aug 4 14:17:49 EDT  
2015

**Prysbby, Mike (DEQ)**

**From:** Michael Glasgow <mglasgow@cityofflint.com>  
**Sent:** Wednesday, June 10, 2015 10:37 AM  
**To:** Prysbby, Mike (DEQ)  
**Subject:** Re: Lead-Copper info  
**Attachments:** Consumer Notice of Lead Results.docx

**PPI**

*personal  
cell*

Mike,

To answer your questions:

1. I'm trying to compile the list.
2. There were a couple of Apartment residences that were used in the first sampling pool. These would be tier 2 sites the majority were Tier 1.
3. A copy of the consumer notice is attached below.
4. This was in response to a customer complaint, and it is a business. I would only use the Utility sink as a site if we are short a sample, and would be a Tier 3. This is not in our sample pool, but is served by lead service line.

On Tue, Jun 9, 2015 at 10:14 AM, Prysbby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Mike,

I was trying to contact you regarding Lead and Copper info that we may need. I don't have your cell number....and the WTP main phone was not switching over to the option to have my incoming call forwarded to the lab. I wish to discuss the following:

1. Basically, we need a listing of Flint's PB&CU sampling pool (around 120 sites) with the Tier designation (Tier 1, Tier 2, or Tier 3) and those sites with lead services. It is possible that you may have sent us this information last summer as part of revising the lead & copper monitoring program.
2. The lead & copper reporting form for the July 2014 – Dec 2014 monitoring period states that not all sites were Tier 1; however, the listing of all 100 locations on the subsequent pages show all locations being Tier 1. Please clarify
3. Please provide us a copy of the consumer lead notice that was mailed to each customer in your sampling pool....we only need a copy of one notice.

4. We have received 28 of the 100 samples for the Jan-June 2015 round of lead/copper monitoring. Four of the samples were above the lead action level; however the PURPOSE of monitoring for two of these was noted as "OTHER" instead of ROUTINE MONITORING. The address of these 2 locations are: 625 S. Grand Traverse (Utility Sink) and 625 S. Grand Traverse (Bathroom). Is this site part of the sampling pool or was this location sampled based on a customer complaint and/or concern?

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

--

Mike Glasgow  
Utilities Administrator  
City of Flint

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



**Sample Number**

**LF64282**

**Official Laboratory Report**

Report To: **MIKE GLASGOW**  
4500 N DORT HWY  
FLINT MI 48505

*Basement Not Trier?*

System Name/Owner: **CITY OF FLINT**  
Collection Address: **625 S GRAND TRAVERSE, FLINT**  
Collected By: **MIKE GLASGOW**  
Township/Well#/Section: **//**  
County: **Genesee**  
Sample Point: **BATHROOM**  
Water System: **Treated Public Distribution System**

WSSN/Pool ID: **2310**  
Source: **TYPE III**  
Site Code:  
Collector: **Public Water Supply Operator**  
Date Collected: **05/15/2015 13:00**  
Date Received: **05/20/2015 11:24**  
Purpose: **Other**

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.017	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.**  
**630 South Saginaw**  
**Flint, MI 48502-1540**  
**810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian





MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF64284

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 625 S GRAND TRAVERSE, FLINT  
Collected By: MIKE SARGENT  
Township/Well#/Section: //  
County: Genesee  
Sample Point: UTILITY SINK  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE III  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/18/2015 08:30  
Date Received: 05/20/2015 11:24  
Purpose: Other

*Not Tien?*

*Not For Compliance*

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.020	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

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630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF57732**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1383 WASHINGTON AVE, FLINT  
Collected By: ANTHONY PALLADENO  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/09/2015 08:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

*Past 14 days  
Hold time  
for Preservation*

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.16	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
212 BROWNING AVE  
FLINT MI 48507

Sample Number: LLF54945

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 2/18/2015 7:15:00 AM  
Arrival Date: 2/19/2015 11:13:00 AMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: LEANNE WALTERS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.104	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Tue Aug 4 14:16:40 EDT  
2015*was whole house filter*



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57729

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	212 BROWNING AVE, FLINT	Source:	Single Family Dwelling
Collected By:	MIKE GLASGOW	Site Code:	
Township/Well#/Section:	//	Collector:	Public Water Supply Operator
County:	Genesee	Date Collected:	03/18/2015 11:10
Sample Point:	KITCHEN	Date Received:	03/24/2015 11:05
Water System:	Treated Public Distribution System	Purpose:	Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

Not 1st draw  
whole house filter

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
212 BROWNING AVE  
FLINT MI 48507

Sample Number: LLF56229

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 2/25/2015 10:26:00 AM  
Arrival Date: 3/6/2015 11:34:24 AM

Site Code:  
Water Source: Single Family Dwelling  
Sample Reason: Water Quality Problem  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Public Water Supply Operator  
Collected By: MIKE GLASGOW

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-38-2	ARSENIC (TOTAL)	ND	0.002	mg/L	EPA 200.8
7440-39-3	BARIUM	0.01	0.01	mg/L	EPA 200.8
7440-41-7	BERYLLIUM	ND	0.0004	mg/L	EPA 200.8
7440-43-9	CADMIUM (TOTAL)	ND	0.0003	mg/L	EPA 200.8
7440-47-3	CHROMIUM (TOTAL)	ND	0.01	mg/L	EPA 200.8
7439-97-6	MERCURY	ND	0.0001	mg/L	EPA 200.8
7440-02-0	NICKEL	ND	0.01	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8
7440-36-0	ANTIMONY	ND	0.0006	mg/L	EPA 200.8
7782-49-2	SELENIUM (TOTAL)	ND	0.001	mg/L	EPA 200.8
7440-28-0	THALLIUM	ND	0.0002	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Thu Aug 27 09:25:58 EDT  
2015



## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

---

Owner/Location Information:

CITY OF FLINT  
212 BROWNING AVE  
FLINT MI 48507

Sample Number: LLF59748

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 4/2/2015 8:00:00 AM  
Arrival Date: 4/14/2015 11:07:48 AM

Site Code:  
Water Source: Single Family Dwelling  
Sample Reason: Other  
Sample Point: Treated Public Distribution System  
Point Description: PRE P O S  
Collector: Private Citizen  
Collected By: LEEANNE WALTERS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.707	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Thu Aug 27 09:27:00 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
2205 FLUSHING RD  
FLINT MI 48504

Sample Number: LLF47179

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 11/19/2014 6:00:00 AM  
Arrival Date: 11/21/2014 10:35:42 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: CHRIS BEATENHEAD

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 13:44:46 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
3814 WHITTER AVE  
FLINT MI 48506

Sample Number: LLF47180

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 11/20/2014 6:45:00 AM  
Arrival Date: 11/21/2014 10:35:42 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: BATHROOM  
Collector: Private Citizen  
Collected By: BRIAN URCH

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:28:35 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
3521 BENNETT AVE  
FLINT MI 48505

Sample Number: LLF47541

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 11/21/2014 5:15:00 AM  
Arrival Date: 11/26/2014 8:41:15 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: BRENT WRIGHT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:28:55 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1220 BEARD ST  
FLINT MI 48503

Sample Number: LLF48387

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/3/2014 7:45:00 AM  
Arrival Date: 12/5/2014 10:57:57 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ANTHONY CHUBB

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.06	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.010	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:33:11 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
3718 DOLPHAINE LN  
FLINT MI 48506

Sample Number: LLF48388

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/3/2014 4:30:00 AM  
Arrival Date: 12/5/2014 10:57:57 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JON MOCHTY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:33:20 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2213 FLUSHING RD  
FLINT MI 48504

Sample Number: LLF48389

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/3/2014 6:15:00 PM  
Arrival Date: 12/5/2014 10:57:58 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: RYAN DAVIS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.10	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:33:31 EDT  
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## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

---

Owner/Location Information:

CITY OF FLINT  
721 EAST ST APT #2  
FLINT MI 48503

Sample Number: LLF49329

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/10/2014 6:30:00 AM  
Arrival Date: 12/11/2014 2:53:18 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MELANIE POISSON

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.12	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.009	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:33:41 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
1125 BARRIE AVE  
FLINT MI 48507

Sample Number: LLF49330

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 6:30:00 AM  
Arrival Date: 12/11/2014 2:53:20 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DAVID TAYLOR

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:10:12 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
1505 WOODLAWN PARK DR  
FLINT MI 48503

Sample Number: LLF49331

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/6/2014 9:30:00 AM  
Arrival Date: 12/11/2014 2:53:22 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MARY LAZAR

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.005	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:10:33 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
2622 WINDEMERE  
FLINT MI 48503

Sample Number: LLF49332

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/7/2014 8:00:00 AM  
Arrival Date: 12/11/2014 2:53:29 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MATT SELLY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.005	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:10:43 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
3517 BENNETT  
FLINT MI 48506Sample Number: LLF49333

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Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/10/2014 7:00:00 AM  
Arrival Date: 12/11/2014 2:53:31 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: RANDY FREEMAN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:10:57 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
927 KENSINGTON AVE  
FLINT MI 48503

Sample Number: LLF49334

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 7:30:00 AM  
Arrival Date: 12/11/2014 2:53:33 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DENNIS FULLER

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:11:06 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
1109 KENSINGTON  
FLINT MI 48503

Sample Number: LLF49335

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 8:11:00 AM  
Arrival Date: 12/11/2014 2:53:35 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JASON LORENZ

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:11:14 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
1901 MONTCLAIR AVE  
FLINT MI 48503

Sample Number: LLF49336

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 7:15:00 AM  
Arrival Date: 12/11/2014 2:53:36 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: BATHROOM  
Collector: Private Citizen  
Collected By: MICHAEL KELLY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.06	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:11:25 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
1809 LYNBROOK  
FLINT MI 48507

Sample Number: LLF49337

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 4:30:00 AM  
Arrival Date: 12/11/2014 2:53:37 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DAWN STEELE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:11:37 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
1130 SIMCOE AVE  
FLINT MI 48507

Sample Number: LLF49338

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 5:50:00 AM  
Arrival Date: 12/11/2014 2:53:39 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: KELLY PLUNKEY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.05	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:11:46 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
413 BURROUGHS AVE  
FLINT MI 48507

Sample Number: LLF49339

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 6:30:00 AM  
Arrival Date: 12/11/2014 2:53:41 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: AMANDA TRUJILLO

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:11:55 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
2079 ZIMMERMAN  
FLINT MI 48503

Sample Number: LLF49340

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 7:00:00 AM  
Arrival Date: 12/11/2014 2:53:42 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MICHAEL EVERETT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:12:11 EDT  
2015





## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2615 WESTWOOD PKWY  
FLINT MI 48503

Sample Number: LLF49341

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/6/2014 6:24:00 AM  
Arrival Date: 12/11/2014 2:53:43 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: LOUIS EMMERT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.28	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:12:20 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
2441 NORBERT  
FLINT MI 48504

Sample Number: LLF49342

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 4:30:00 AM  
Arrival Date: 12/11/2014 2:53:44 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: PAT SEALS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.06	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.008	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:12:28 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
711 KENSINGTON AVE  
FLINT MI 48503

Sample Number: LLF49343

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/9/2014 7:00:00 AM  
Arrival Date: 12/11/2014 2:53:45 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DON WOLFE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:12:40 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
2015 GOLD AVE  
FLINT MI 48503

Sample Number: LLF49344

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 8:00:00 AM  
Arrival Date: 12/11/2014 2:53:46 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: BRIAN HAGGINS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:12:50 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
618 S MEADE ST  
FLINT MI 48503

Sample Number: LLF49345

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 7:12:00 AM  
Arrival Date: 12/11/2014 2:53:48 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: LOIS M LEE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:13:01 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2802 WESTWOOD PKWY  
FLINT MI 48503

Sample Number: LLF49346

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 8:30:00 AM  
Arrival Date: 12/11/2014 2:53:49 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MARY COE RYAN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:13:12 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
1914 PENBROOK LN  
FLINT MI 48507

Sample Number: LLF47542

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 11/20/2014 6:10:00 AM  
Arrival Date: 11/26/2014 8:41:16 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: BATHROOM  
Collector: Private Citizen  
Collected By: KARL ADKINS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:29:10 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
305 ALLENDALE PL  
FLINT MI 48503

Sample Number: LLF47543

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 11/24/2014 8:00:00 AM  
Arrival Date: 11/26/2014 8:41:16 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ROBERT CASE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.13	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:29:24 EDT  
2015





## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:CITY OF FLINT  
518 FROST ST  
FLINT MI 48504

Sample Number: LLF48383

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Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/1/2014 11:00:00 AM  
Arrival Date: 12/5/2014 10:57:55 AMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: STEVEN TAYLOR

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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**Laboratory Comments:**

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:29:34 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
3120 NORWOOD DR  
FLINT MI 48503

Sample Number: LLF48384

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/2/2014 6:15:00 AM  
Arrival Date: 12/5/2014 10:57:56 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: BATHROOM  
Collector: Private Citizen  
Collected By: TOM HUTCHINGS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:29:43 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1901 CRESTBROOK LN  
FLINT MI 48507

Sample Number: LLF48385

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 11/25/2014 8:10:00 AM  
Arrival Date: 12/5/2014 10:57:56 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MICHELLE JOYNER

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.07	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:29:53 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
3727 MARYLAND AVE  
FLINT MI 48506

Sample Number: LLF48386

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/3/2014 6:00:00 AM  
Arrival Date: 12/5/2014 10:57:56 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JOSHUA FREEMAN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 14:30:04 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
860 SCHAFER ST  
FLINT MI 48503

Sample Number: LLF49347

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 4:30:00 AM  
Arrival Date: 12/11/2014 2:53:50 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DERRICK JONES

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.07	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:33:45 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1021 S FRANKLIN AVE  
FLINT MI 48503

Sample Number: LLF49348

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 5:15:00 AM  
Arrival Date: 12/11/2014 2:53:51 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ROBERT AGUIRRE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:43:22 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:CITY OF FLINT  
1616 DURAND  
FLINT MI 48503

Sample Number: LLF49349

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 7:05:00 AM  
Arrival Date: 12/11/2014 2:53:51 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: LYNNE HURAND

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.20	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:43:32 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2730 WESTWOOD PKWY  
FLINT MI 48503

Sample Number: LLF49351

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 7:00:00 AM  
Arrival Date: 12/11/2014 2:53:52 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ELIZABETH MURPHY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.29	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.023	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:43:41 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
1543 KEARSLEY PARK BLVD  
FLINT MI 48506

Sample Number: LLF49352

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 5:30:00 AM  
Arrival Date: 12/11/2014 2:53:55 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JACKIE KOZLOWICZ

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:43:50 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
2920 PARKSIDE DR  
FLINT MI 48503

Sample Number: LLF49353

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 7:40:00 AM  
Arrival Date: 12/11/2014 2:53:56 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JANICE HENRY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.22	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.010	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:43:59 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2721 WESTWOOD PKWY  
FLINT MI 48503

Sample Number: LLF49354

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 9:15:00 AM  
Arrival Date: 12/11/2014 2:53:56 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Other  
Collected By: D J TRELA

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:44:10 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
1002 DURAND ST  
FLINT MI 48503

Sample Number: LLF49355

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 3:00:00 PM  
Arrival Date: 12/11/2014 2:53:57 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ANDREW EVERETT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:44:19 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
2560 THOMAS ST  
FLINT MI 48504

Sample Number: LLF49356

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 9:17:00 AM  
Arrival Date: 12/11/2014 2:53:58 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JESSICA SANCHEZ

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:44:28 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
815 BRADLEY AVE  
FLINT MI 48503

Sample Number: LLF49357

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/7/2014 7:45:00 AM  
Arrival Date: 12/11/2014 2:54:00 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: BATHROOM  
Collector: Private Citizen  
Collected By: ELIZABETH IRELAND-CURTIS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.27	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.005	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:44:43 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
4013 BROWNELL BLVD  
FLINT MI 48504

Sample Number: LLF49358

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 8:15:00 AM  
Arrival Date: 12/11/2014 2:54:01 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ADRIAN JONES

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.08	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:44:52 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2418 GOLD AVE  
FLINT MI 48503

Sample Number: LLF49359

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/10/2014 4:15:00 AM  
Arrival Date: 12/11/2014 2:54:02 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: KATHLEEN ADAMS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:45:05 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
626 COMMONWEALTH AVE  
FLINT MI 48503

Sample Number: LLF49360

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Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 9:00:00 AM  
Arrival Date: 12/11/2014 2:54:02 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: HARRIET KENWORTHY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:45:14 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
920 STOCKER AVE  
FLINT MI 48503

Sample Number: LLF49361

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/9/2014 4:40:00 AM  
Arrival Date: 12/11/2014 2:54:03 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MICHAEL TAYLOR

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:46:28 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
430 WESTCOMBE AVE  
FLINT MI 48503

Sample Number: LLF49362

---

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/9/2014 9:00:00 AM  
Arrival Date: 12/11/2014 2:54:04 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: ROBERT MACDONALD

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:46:40 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
1623 NEOME DR  
FLINT MI 48503

Sample Number: LLF49363

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/5/2014 6:38:00 AM  
Arrival Date: 12/11/2014 2:54:05 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: TAMAR LEWIS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.07	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.007	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:46:48 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
3802 GOREY AVE  
FLINT MI 48506

Sample Number: LLF49364

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 10:00:00 AM  
Arrival Date: 12/11/2014 2:54:06 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SEVENA RODRIGUEZ

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.05	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:46:56 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
1720 DAVISON RD  
FLINT MI 48506

Sample Number: LLF49365

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/4/2014 6:58:00 AM  
Arrival Date: 12/11/2014 2:54:06 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: UTILITY RO  
Collector: Private Citizen  
Collected By: JOSHUA FREEMAN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.13	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:47:09 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
2110 MOUNTAIN AVE  
FLINT MI 48503

Sample Number: LLF49366

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 3:16:00 PM  
Arrival Date: 12/11/2014 2:54:07 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: TIM COLLARDEY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.06	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.005	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:47:19 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
2006 CLEMENT ST  
FLINT MI 48504

Sample Number: LLF49367

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/3/2014 8:30:00 AM  
Arrival Date: 12/11/2014 2:54:08 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: BATHROOM  
Collector: Private Citizen  
Collected By: THOMAS HERTZ

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Defect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:47:27 EDT  
2015





## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2028 CORUNNA RD  
FLINT MI 48503

Sample Number: LLF49368

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/7/2014 7:00:00 AM  
Arrival Date: 12/11/2014 2:54:08 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: PAUL EVERETT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:47:37 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2829 YALE ST  
FLINT MI 48503

Sample Number: LLF50201

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/10/2014 9:00:00 AM  
Arrival Date: 12/18/2014 11:14:56 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: CHRIS BAKAN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 15:47:46 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
1914 W HOME AVE  
FLINT MI 48504

Sample Number: LLF50202

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 5:48:00 AM  
Arrival Date: 12/18/2014 11:14:57 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: DAZARINE BURNETT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:22:36 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2920 N DEXTER ST  
FLINT MI 48506

Sample Number: LLF50203

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 7:00:00 AM  
Arrival Date: 12/18/2014 11:14:57 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DAVID FIELDER

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Defect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.07	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:22:56 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2810 KELLAR AVE  
FLINT MI 48504

Sample Number: LLF50204

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 9:40:00 AM  
Arrival Date: 12/18/2014 11:14:57 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DELORES KEITH

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:23:06 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
3245 MONTANA AVE  
FLINT MI 48506

Sample Number: LLF50205

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 10:35:00 AM  
Arrival Date: 12/18/2014 11:14:57 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: JAMES L MOTON

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:23:15 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
3623 NORWOOD DR  
FLINT MI 48503

Sample Number: LLF50206

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 6:55:00 AM  
Arrival Date: 12/18/2014 11:14:58 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: SUSAN SULLIVAN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:23:25 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2801 REYNOLDS  
FLINT MI 48503

Sample Number: LLF50207

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/8/2014 5:45:00 AM  
Arrival Date: 12/18/2014 11:14:58 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: CALIX MARTINEZ

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:23:34 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
3510 BRANDON ST  
FLINT MI 48503

Sample Number: LLF50208

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/10/2014 7:00:00 AM  
Arrival Date: 12/18/2014 11:14:58 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ERIC BOW

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.08	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.005	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:23:49 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
2117 STANFORD AVE  
FLINT MI 48503

Sample Number: LLF50209

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/11/2014 1:30:00 PM  
Arrival Date: 12/18/2014 11:14:59 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: CHIMENE HILL

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:23:58 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:CITY OF FLINT  
5806 LESLIE DR  
FLINT MI 48504Sample Number: LLF50210

---

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/12/2014 11:37:00 AM  
Arrival Date: 12/18/2014 11:14:59 AMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: F L GREEN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:06 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1809 W HOME AVE  
FLINT MI 48504

Sample Number: LLF50211

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/11/2014 6:20:00 AM  
Arrival Date: 12/18/2014 11:14:59 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SHIRLEY JEAN WILLIAMS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:14 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
1414 STONE ST  
FLINT MI 48503

Sample Number: LLF50212

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/12/2014 6:00:00 AM  
Arrival Date: 12/18/2014 11:15:00 AMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: JAMEY L SMITH

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:25 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
2006 AITKEN AVE  
FLINT MI 48503

Sample Number: LLF50721

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/16/2014 7:30:00 AM  
Arrival Date: 12/23/2014 1:34:45 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: NORMAN GRAHAM

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:33 EDT  
2015



## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

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Owner/Location Information:

CITY OF FLINT  
3131 WOLCOTT  
FLINT MI 48504

Sample Number: LLF50722

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/17/2014 8:11:00 AM  
Arrival Date: 12/23/2014 1:34:46 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: KATHY MCGAUGHY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:42 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
983 GAINEY AVE  
FLINT MI 48503

Sample Number: LLF50723

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/17/2014 6:15:00 AM  
Arrival Date: 12/23/2014 1:34:46 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JOANN CUSIC

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.10	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:50 EDT  
2015





## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:-  
CITY OF FLINT  
2806 NORBERT ST  
FLINT MI 48504

Sample Number: LLF50724

Sample/Collection Information:-  
WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/18/2014 6:30:00 AM  
Arrival Date: 12/23/2014 1:34:46 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ARIEL DANTZLER

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:24:58 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
912 CRAWFORD ST  
FLINT MI 48507

Sample Number: LLF50725

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 5:30:00 AM  
Arrival Date: 12/23/2014 1:34:47 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MICHAEL S REITER

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:10 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
4024 STERLING  
FLINT MI 48504

Sample Number: LLF50726

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/16/2014 9:30:00 AM  
Arrival Date: 12/23/2014 1:34:47 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: BETTY WESLEY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:18 EDT  
2015



## Michigan Department of Environmental Quality

---

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
3737 WORCHESTER DR  
FLINT MI 48503

Sample Number: LLF50727

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/16/2014 6:45:00 AM  
Arrival Date: 12/23/2014 1:34:47 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SHERRI TOLBERT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.14	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:26 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
1100 STOCKTON ST  
FLINT MI 48503

Sample Number: LLF50728

---

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/16/2014 5:00:00 AM  
Arrival Date: 12/23/2014 1:34:48 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JOHN E ROSE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.006	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:34 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1725 LINCOLN AVE  
FLINT MI 48503

Sample Number: LLF50729

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/21/2014 6:00:00 AM  
Arrival Date: 12/23/2014 1:34:48 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MICHELE IGRAM

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:42 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:CITY OF FLINT  
3139 COLORADO  
FLINT MI 48506Sample Number: LLF50730

---

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/16/2014 6:10:00 AM  
Arrival Date: 12/23/2014 1:34:48 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: TIM ABRAHAM

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:50 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1401 GAINEY AVE  
FLINT MI 48503

Sample Number: LLF50731

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/20/2014 8:30:00 AM  
Arrival Date: 12/23/2014 1:34:48 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: LUCY LAFRENIERE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:25:58 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
2730 COVENTRY CT  
FLINT MI 48503

Sample Number: LLF50732

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/19/2014 9:30:00 AM  
Arrival Date: 12/23/2014 1:34:49 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SUSAN HARAISTY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:26:09 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:CITY OF FLINT  
709 FROST ST  
FLINT MI 48504

Sample Number: LLF50733

---

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/19/2014 9:00:00 AM  
Arrival Date: 12/23/2014 1:34:49 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: MAURICCI GUYNN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:26:16 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:CITY OF FLINT  
2307 RADCLIFFE  
FLINT MI 48503

Sample Number: LLF50734

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/20/2014 7:08:00 AM  
Arrival Date: 12/23/2014 1:34:49 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ANDREW ARMSTRONG

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.08	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.037	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:26:27 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
224 E COURT ST APT 508  
FLINT MI 48502

Sample Number: LLF50735

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/15/2014 6:45:00 AM  
Arrival Date: 12/23/2014 1:34:50 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: S J DAUIDEK

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:26:36 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:CITY OF FLINT  
3440 RANGELEY  
FLINT MI 48503Sample Number: LLF50736

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Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/13/2014 8:57:00 AM  
Arrival Date: 12/23/2014 1:34:50 PMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JACQUELINE WATKINS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:26:45 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
3808 BROWNELL BLVD  
FLINT MI 48504

Sample Number: LLF50737

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/16/2014 8:00:00 AM  
Arrival Date: 12/23/2014 1:34:50 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: COY BRIDGES

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.09	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:26:53 EDT  
2015



## Michigan Department of Environmental Quality

---

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1006 KENSINGTON  
FLINT MI 48503

Sample Number: LLF50738

---

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/19/2014 6:15:00 AM  
Arrival Date: 12/23/2014 1:34:51 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: FRANCES HOLMES

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:06 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
2517 DELAWARE AVE  
FLINT MI 48506

Sample Number: LLF50824

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/18/2014 5:30:00 AM  
Arrival Date: 12/29/2014 10:28:00 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: RUSS BEDFORD

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.20	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.005	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:16 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
1810 W HOBSON AVE  
FLINT MI 48504

Sample Number: LLF50825

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/21/2014 6:00:00 AM  
Arrival Date: 12/29/2014 10:28:05 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: MR AND MRS VERNON

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:25 EDT  
2015



## Michigan Department of Environmental Quality

---

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:CITY OF FLINT  
5805 LESLIE DR  
FLINT MI 48504

Sample Number: LLF50826

Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/21/2014 7:00:00 AM  
Arrival Date: 12/29/2014 10:28:09 AMSite Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SHIRLEY HILL

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.002	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:32 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1721 CHELSEA CIRCLE  
FLINT MI 48503

Sample Number: LLF50827

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/22/2014 6:25:00 AM  
Arrival Date: 12/29/2014 10:28:11 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: CHERYL CHRISTOFF

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:41 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
912 WALDMAN AVE  
FLINT MI 48507

Sample Number: LLF50828

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/23/2014 6:25:00 AM  
Arrival Date: 12/29/2014 10:28:13 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: PAMELA GALE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:51 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:

CITY OF FLINT  
3082 LANNING DR  
FLINT MI 48506

Sample Number: LLF50829

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/24/2014 6:45:00 AM  
Arrival Date: 12/29/2014 10:28:13 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: CONSTANCE L ST GERMAIN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:27:59 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
2515 CHICAGO BLVD  
FLINT MI 48503

Sample Number: LLF50830

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/26/2014 8:15:00 AM  
Arrival Date: 12/29/2014 10:28:13 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: MARY SEVERN

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.006	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:28:07 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
742 LINCOLN AVE  
FLINT MI 48507

Sample Number: LLF50831

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/26/2014 9:30:00 AM  
Arrival Date: 12/29/2014 10:28:14 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DANA V STIF

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.003	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:28:15 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
1910 RAMSAY BLVD  
FLINT MI 48503

Sample Number: LLF50929

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/20/2014 7:00:00 AM  
Arrival Date: 12/30/2014 10:43:18 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: MAIN BATHR  
Collector: Private Citizen  
Collected By: CAROL B CRAWFORD

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:28:29 EDT  
2015





## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
3009 MONTANA AVE  
FLINT MI 48506

Sample Number: LLF51179

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/29/2014 3:12:00 PM  
Arrival Date: 1/6/2015 11:03:34 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: MEMSSA BECKELIC

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:28:55 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1223 CAMPBELL ST  
FLINT MI 48507

Sample Number: LLF51180

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/30/2014 8:00:00 AM  
Arrival Date: 1/6/2015 11:03:35 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: JOSH DEMOTT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.001	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:29:06 EDT  
2015



## Michigan Department of Environmental Quality

---

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
3821 DELAWARE  
FLINT MI 48506

Sample Number: LLF51181

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/27/2014 9:00:00 AM  
Arrival Date: 1/6/2015 11:03:35 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: THOMAS R KERBEY

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:29:16 EDT  
2015



## Michigan Department of Environmental Quality

---

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
1651 WOODLAWN PARK  
FLINT MI 48503

Sample Number: LLF51182

---

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/29/2014 5:42:00 AM  
Arrival Date: 1/6/2015 11:03:35 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: KIRWIN KINNEE

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:29:25 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1911 CORRY ST  
FLINT MI 48506

Sample Number: LLF51183

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/30/2014 8:10:00 AM  
Arrival Date: 1/6/2015 11:03:36 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: DAWN WILLIAMS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:29:34 EDT  
2015



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

---

Owner/Location Information:

CITY OF FLINT  
3507 DEARBORN AVE  
FLINT MI 48507

Sample Number: LLF51184

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/30/2014 9:15:00 AM  
Arrival Date: 1/6/2015 11:03:36 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SUZANNE EREMA

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.006	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:29:44 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
3829 IVAN HOE AVE  
FLINT MI 48506

Sample Number: LLF51185

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/29/2014 3:00:00 PM  
Arrival Date: 1/6/2015 11:03:36 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ADREAN ELMOT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

---

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:29:53 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

---

Owner/Location Information:

CITY OF FLINT  
1559 CHEVROLET AVE  
FLINT MI 48504

Sample Number: LLF51186

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/30/2015 7:00:00 AM  
Arrival Date: 1/6/2015 11:03:00 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: SAMUEL ANCIRA

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.009	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Wed Aug 26 16:30:03 EDT  
2015





## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
928 DURAND  
FLINT MI 48503

Sample Number: LLF49350

Sample/Collection Information:

WSSN:  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/7/2014 7:00:00 AM  
Arrival Date: 12/11/2014 2:53:52 PM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: TONY EVERETT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	ND	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Thu Aug 27 14:17:13 EDT  
2015



## Michigan Department of Environmental Quality

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***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

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Owner/Location Information:

CITY OF FLINT  
1805 RAMSAY BLVD  
FLINT MI 48503

Sample Number: LLF50928

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 12/27/2014 7:00:00 AM  
Arrival Date: 12/30/2014 10:43:18 AM

Site Code:  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN  
Collector: Private Citizen  
Collected By: ANTHONY EVERETT

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.004	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Thu Aug 27 14:18:23 EDT  
2015

Message

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**From:** Wurfel, Brad (DEQ) [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FE4C6F6A36CD400AAEBD429A6108FDC2-WURFEL BRAD]  
**Sent:** 12/6/2013 9:28:09 PM  
**To:** Shekter Smith, Liane (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f8157efaafd2404899c8ad3a4197c53a-Shekter Smith Liane]  
**CC:** Benzie, Richard (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9ec5ca50ffe4e9392405565b506bc37-Benzie Richard]; Monosmith, Carrie (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=741532eaf7034061b99e374887aa548b-Monosmith Carrie]; Butler, Sonya (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=546df693f79e4d7996846e76665fc93f-Butler Sonya]; Tetzlaff, Katherine (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=70f1f7ec40d848a0aa8ceeb8aa919c95-Tetzlaff Katherine]; Willard, Veronica (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8c708ec8a43b4722822abab4978a1302-WILLARDV]  
**Subject:** RE: 2014 Communications planning: NEED YOUR HELP

Thank you!

b

Brad Wurfel

Communications Director

Michigan Department of Environmental Quality

PLEASE NOTE NEW DESK PHONE:

517-284-6713 — office

**PPI**

cell

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, December 05, 2013 4:54 PM  
**To:** Wurfel, Brad (DEQ)  
**Cc:** Benzie, Richard (DEQ); Monosmith, Carrie (DEQ); Butler, Sonya (DEQ); Tetzlaff, Katherine (DEQ); Willard, Veronica

(DEQ)

**Subject:** RE: 2014 Communications planning: NEED YOUR HELP

ODWMA came up with a few suggestions:

#### Stormwater Asset Management & Wastewater (SAW) Program

DEQ was able to plan and develop the new SAW Grant & Loan Program. Enacting legislation was signed on January 2, 2013. Applications for funding were available in October 2013. SAW will award \$97M in the first year.

#### Asset Management Training

Over 500 people attended Asset Management Training provided by the DEQ. The training was designed to provide relevant and timely information to drinking water and wastewater municipal systems.

The issuance of construction permits to the KWA for the installation of Lake Huron Intakes (south of Lexington) to provide water service to Genesee county and Flint.

Issue of construction permits to Bay County for the construction of a new WTP using the Saginaw-Midland Municipal Water System as a source (Lake Huron versus Saginaw Bay).

Successfully rolled out the new Stage II Disinfection By-Product Rule to District Systems, providing technical assistance in the form of draft sampling plans and personalized consultations to ensure that the new rule was implemented smoothly.

The Michigan Groundwater Management Tool (MGMT) is a software platform that was developed in a Joint Funding Agreement with Michigan State University. MGMT utilizes spatially compiled groundwater data and allows for the automated analysis of ground water flow. MGMT now allows us to provide delineations at no charge for the smaller community and non-community water systems. Most of these MGMT delineations closely parallel traditionally developed Wellhead Protection Areas (WHPA's), which cost an average \$36,000. In fiscal year 2013, almost 1800 public water supplies had provisional delineations completed by the MGMT at no cost. The provisional delineations identify these WHPA's and are the first critical step in protecting drinking water sources.

A total of 2416 drinking water operators trained in DEQ or jointly sponsored training classes.

Liane J. Shekter Smith, P.E., Chief

Office of Drinking Water and Municipal Assistance

Michigan Department of Environmental Quality

*\*\* Effective August 12, 2013 my new number will be (517) 284-6543*

**From:** Wurfel, Brad (DEQ)

**Sent:** Monday, November 25, 2013 5:30 PM

**To:** Creal, William (DEQ); Fish, Kim (DEQ); Erickson, Susan (DEQ); Wagner, Robert (DEQ); Browne, Elizabeth (DEQ); Shekter Smith, Liane (DEQ); Allan, Jon (DEQ); Fitch, Hal (DEQ); Feighner, Bryce (DEQ); Hellwig, Vince (DEQ); Fiedler, Lynn (DEQ); Kasprzak, Jim (DEQ); Epkey, Amy (DEQ)

**Cc:** Sellers, Fred (DEQ); Hollenbach, Heidi (DEQ); Roycraft, Phil (DEQ); Hare, Chris (DEQ); Hartz, Andrew (DEQ); Ethridge, Christopher (DEQ); Adelman, Mitch (DEQ); McClellan, Michael (DEQ); Casey, Steve (DEQ); Sweeney, Brian (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Wyant, Dan (DEQ)

**Subject:** 2014 Communications planning: NEED YOUR HELP

**Importance:** High

Greetings, all. We're moving toward a great 2014, where we will be doing more strategic communication and impactful storytelling.

As we prepare the departmental communications plan, I need your input. The Director has tasked me with collecting 2013 Accomplishments from each of the divisions and districts.

I don't need a book. Half a dozen of your top accomplishments on the year would be very helpful. One liner with a few sentences.

I need these by Dec. 6, in preparation for an off-site planning meeting Dec. 9.

If you have questions, please get in touch with me directly. THANK YOU, and happy holidays.

Brad Wurfel

Communications Director

Michigan Department of Environmental Quality

PLEASE NOTE NEW DESK PHONE:

**517-284-6713** – office



Message

---

**From:** Benzie, Richard (DEQ) [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=9EC5CA50FFFE4E9392405565B506BC37-BENZIE RICHARD]  
**Sent:** 12/6/2013 3:29:11 PM  
**To:** Shekter Smith, Liane (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f8157efaafd2404899c8ad3a4197c53a-Shekter Smith Liane]  
**CC:** Monosmith, Carrie (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=741532eaf7034061b99e374887aa548b-Monosmith Carrie]; Butler, Sonya (DEQ) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=546df693f79e4d7996846e76665fc93f-Butler Sonya]  
**Subject:** RE: 2014 Communications planning: NEED YOUR HELP

Excellent! We do good work.

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, December 05, 2013 4:54 PM  
**To:** Wurfel, Brad (DEQ)  
**Cc:** Benzie, Richard (DEQ); Monosmith, Carrie (DEQ); Butler, Sonya (DEQ); Tetzlaff, Katherine (DEQ); Willard, Veronica (DEQ)  
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Office of Drinking Water and Municipal Assistance

Michigan Department of Environmental Quality

*\*\* Effective August 12, 2013 my new number will be (517) 284-6543*

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**Sent:** Monday, November 25, 2013 5:30 PM

**To:** Creal, William (DEQ); Fish, Kim (DEQ); Erickson, Susan (DEQ); Wagner, Robert (DEQ); Browne, Elizabeth (DEQ);



Shekter Smith, Liane (DEQ); Allan, Jon (DEQ); Fitch, Hal (DEQ); Feighner, Bryce (DEQ); Hellwig, Vince (DEQ); Fiedler, Lynn (DEQ); Kasprzak, Jim (DEQ); Epkey, Amy (DEQ)

**Cc:** Sellers, Fred (DEQ); Hollenbach, Heidi (DEQ); Roycraft, Phil (DEQ); Hare, Chris (DEQ); Hartz, Andrew (DEQ); Ethridge, Christopher (DEQ); Adelman, Mitch (DEQ); McClellan, Michael (DEQ); Casey, Steve (DEQ); Sweeney, Brian (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Wyant, Dan (DEQ)

**Subject:** 2014 Communications planning: NEED YOUR HELP

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If you have questions, please get in touch with me directly. THANK YOU, and happy holidays.

Brad Wurfel

Communications Director

Michigan Department of Environmental Quality

PLEASE NOTE NEW DESK PHONE:

**517-284-6713** – office

**PPI**

cell

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, August 07, 2014 1:35 PM  
**To:** Philip, Kris (DEQ)  
**Cc:** Cook, Pat (DEQ)  
**Subject:** FW: Public Water Supply Intake Locations  
**Attachments:** PWS Intake Contact Info 4-04.pdf

Did you have anything to do with constructing the attached spreadsheet that ties contact information to intake locations? Could you replicate it from existing databases?

---

**From:** Thomas, Chuck (DEQ)  
**Sent:** Thursday, August 07, 2014 11:00 AM  
**To:** Cook, Pat (DEQ)  
**Cc:** Benzie, Richard (DEQ); Conn, Christopher (DEQ)  
**Subject:** FW: Public Water Supply Intake Locations

Pat,

Does such a thing exist as Chris is asking? If so, can you please email to him directly and cc me? Thanks.

CHUCK THOMAS, P.G.  
DISTRICT SUPERVISOR  
DEQ-ODWMA  
U.P. DISTRICT OFFICE  
906-228-4514

---

**From:** Conn, Christopher (DEQ)  
**Sent:** Thursday, August 07, 2014 10:58 AM  
**To:** Thomas, Chuck (DEQ)  
**Subject:** Public Water Supply Intake Locations

Hi Chuck,

I'm working on a task for the WRD PEAS Committee in updating the content of our PEAS Emergency Response Notebook. Basically this is a resource for District staff use in response to emergency/spill events. One document in our notebook references statewide public water supply intake locations (see attached). I was wondering if you know whether there is an updated version of this resource available. If not, we may take this out of the PEAS notebook due to it being outdated. Thanks!

Christopher Conn  
DEQ-Water Resources Division  
Upper Peninsula District Office  
1504 West Washington Street  
Marquette, MI 49855  
906-202-1439  
[conncc@michigan.gov](mailto:conncc@michigan.gov)

## Public Water Supply Intake Locations - April 8, 2004

	FACILITY	OPERATOR	EMERGENCY PHONE	SOURCE	COUNTY	ADDRESS	CITY	ST	ZIP	CONTACT PHONE	PERMIT ID	TWN_RNG	SEC
1	Adrian Water Intake	Adrian	517-263-0923	Lake Adrian	Lenawee	815 Bent Oak Avenue	Adrian	MI	49221	517-263-2161, ext. 228	N/A	T06S_R03E	26
2	Algonac Water Department	Algonac	810-794-3281	St. Clair River	St. Clair	Drive	Algonac	MI	48001	810-794-3281	N/A	N/A	
3	Alma Water Treatment Plant	Alma, Municipal Water Supply	517-875-5211	Pine River	Gratiot	200 North Lincoln	Alma	MI	48801	517-463-8349	WSSN #0140	N/A	
4	Ann Arbor Water Treatment Plant	Ann Arbor Utilities	734-994-2840	Huron River	Washtenaw	1010 Huron River Drive	Ann Arbor	MI	48103	734-994-2840	N/A	Ann Arbor Township	17
5	Baraga Village Water Plant	Baraga	906-353-6795	Lake Superior	Baraga	801 U.S. Highway 41 South	Baraga	MI	49908	906-353-6795			
6	Bay Metropolitan Water Treatment Plant	Bay City	517-686-8300	Saginaw Bay/Lake Huron	Bay	2691 North Euclid Road	Bay City	MI	48706	517-686-8300	N/A	N/A	
7	Secondary Intake	Bay City	517-686-8300	Saginaw Bay/Lake Huron	Bay	2691 North Euclid Road	Bay City	MI	48706	517-686-8300	N/A	N/A	
8	Benton Harbor Water Filtration Plant	Benton Harbor	616-927-8471, 616-927-8436	Lake Michigan	Berrien	601 Ridgeway	St. Joseph	MI	49085	616-927-8471	WSSN #0600	N/A	
9	Blissfield Water Treatment Plant	Blissfield	517-486-3350	River Raisin	Lenawee	1330 Beamer Road	Blissfield	MI	49228	517-486-3350	N/A	Blissfield Township	
10	City of Bridgman Water Treatment Plant	Bridgman	800-892-7549, ext. 0115	Lake Michigan	Berrien	5247 Lake Street	Bridgman	MI	49106	616-465-5407	N/A		
11	Caseville Village Water Plant	Caseville	517-670-9144, 517-856-2888	Lake Huron	Huron	6685 Clay Street	Caseville	MI	48725	517-856-4407	W870729	T18W_R10E	26
12	Charlevoix Water Treatment Plant	Charlevoix	616-547-9601	Lake Michigan	Charlevoix	97 Grant Street, P.O. Box 550	Charlevoix	MI	49720	616-547-3256	#1330	T34N_R8W	27
13	Deerfield Filtration Plant	Deerfield	517-447-3158	River Raisin	Lenawee	439 West River Street	Deerfield	MI	49238	517-447-3158	N/A	N/A	
14	DeTour Village Waterworks	DeTour Village	906-297-3441, 906-297-2700	St. Mary's River/Lake Huron	Chippewa	578 North Ontario Street	Detour Village	MI	49725	906-297-3521	WSSN #1795	T42N_R04E	35
15	Detroit Water and Sewage Department	Detroit Water and Sewage Department	313-224-3900	Lake Huron	St. Clair	2 Woodward Avenue #513	Detroit	MI	48226	313-224-3900	N/A	N/A	
16	Belle Isle	Detroit Water and Sewerage Department	313-224-4775, 313-224-4776	Detroit River	Wayne	10100 E. Jefferson	Detroit	MI	48214	313-964-9480	N/A	N/A	
17	Southwest Water Plant	Detroit Water and Sewerage Department	313-224-4775, 313-224-4776	Detroit River	Wayne	14700 Moran Road	Allen Park	MI	48101	313-297-9312	N/A	N/A	
18	City of Alpena Water Treatment Plant	Earth Tech Operation Services	517-356-4236	Lake Huron/Thunder Bay	Alpena	1300 State Street	Alpena	MI	49707	517-356-0757	WSSN #0160		
19	East China Township Water Filtration Plant	East China Charter Township	810-985-8115 (sheriff's office)	St. Clair River	St. Clair	205 Recor Road	East China	MI	48054	810-329-9083, 810-765-8528	WSSN #1940	T04N_R17E	19
20	Tawas	East Tawas		Lake Huron									
21	Escanaba City Water	Escanaba	906-786-5911	Lake Michigan/ Green Bay	Delta	1 Water Plant Road, P.O. Box 948	Escanaba	MI	49829	906-786-3291, fax. 906-789-3790	N/A	T39N_R22W	29
22	Emergency Intake	Flint	810-787-4121	Flint River	Genesee	4500 N. Dort	Flint	MI	48505	810-787-6537	N/A	City of Flint	
23	Gladstone Water Filtration Plant	Gladstone	906-428-3131	Lake Michigan/ Little Bay de Noc	Delta	22 Delta Avenue	Gladstone	MI	49837	906-428-3460	WSSN #2640	T40N_R22W	22
24	Grand Haven Water Filtration Plant	Grand Haven	616-847-3488	Lake Michigan	Ottawa	30 Sherman Avenue	Grand Haven	MI	49417	616-847-3488/ 3487	88-09-0647	R16W	16
25	Lake Michigan Filtration Plant, North Intake	Grand Rapids	616-456-3254	Lake Michigan	Ottawa	17350 Lake Michigan Drive	West Olive	MI	49460	616-456-3700	WSSN #2790	N/A	
26	Lake Michigan Filtration Plant, South Intake	Grand Rapids	616-456-3254	Lake Michigan	Ottawa	17350 Lake Michigan Drive	West Olive	MI	49460	616-456-3700	WSSN #2790	N/A	
27	Emergency Intake	Grand Rapids		Lake Michigan									
28	Emergency Intake	Grand Rapids		Lake Michigan									

## Public Water Supply Intake Locations - April 8, 2004

	LAT	LONG	LOCATION DESCRIPTION	DEPTH	SEASON USE	STORE TIME	ALTERNATIVE SOURCE	PEOPLE SERVED	COMMENTS
1	41.91284	-84.03665		11.8 feet	Year-round	4 mil G	Groundwater	20000	Intake is a poured concrete structure with a corrugated half round roof. Additional source in planning stage.
2	42.62083	-82.52640		22 feet	Year-round	8 hours	None	10000	
3	43.37389	-84.66612	Intake is 300 feet from the north shore of the Pin River, approx. 400 yds. from the State Street Dam. Nearest cross street to facility is Lincoln and Mechanic.	4 feet	Year-round	1.56 mil G	Groundwater	10000	Distribution storage is one 500,000 gal. elevated tank and one 1mil gal. ground reservoir. Daily demand is approx. 3 MGD.
4	42.30864	-83.75374	Intake located 20 feet deep on left end of Barton Dam below Power House Building.	20 feet	Year-round	19 mil G	Groundwater	115000	75% of withdrawal required from surface waters to maintain city need. Second intake located 200 yards east of right end of Barton Dam in middle of river.
5	46.77073	-88.48969						0	
6	43.71722	-83.90140	Crib is located approximately 1.9 miles east of Boutell Road in Saginaw Bay.	16 feet	Year-round	10 mil G	Secondary Intake	93000	Primary intake for Bay City Metro.
7	43.67333	-83.89750	Secondary crib is located approximately 3900 feet north of east end of the State Park.	7 feet	Year-round	10 mil G	Primary Intake	93000	Secondary intake for Bay City Metro.
8	42.13055	-86.48612	Intake is located 3,950 feet from the water plant on approximate bearing of 326 deg. approximately 232 feet from the park pavilion in Jean Klock Park.	27feet	Year-round	2 mil G	City of St. Joseph PWS	20000	The intake is north of the piers marking outlet of the St. Joseph and Paw Paw Rivers. Water flows by gravity to a wetwell inside the facility.
9	41.82826	-83.87898		depth unknown	Year-round	N/A	None	0	
10	41.94306	-86.58470	Intake location varies presently 20 feet from shoreline and is buried.	6 feet	Year-round	600K G	None	2300	
11	43.94861	-83.28195	Intake is located in front of the county park. Water plant is one mile away located by the high school.	9 feet	Year-round	1-3 days	None	900	The storage time varies from winter (3 days) to summer (1 day) seasons.
12	45.32222	-85.27028	Direct Filtration Plant is adjacent to Pine River Channel on Lk MI. 24 inch buried intake appx. 80 ft directly in front of the Plant on Lake Michigan.	20 feet	Year-round	1 mill G	Charleviox Township PWS	10000	Winter population is around 5000, summer population is around 10,000. Plant capacity is approximately 2.5 MGD.
13	41.88335	-83.78325	Plant is located on southwest side of Deerfield Village. Intake is located 300 feet south of water filtration plant.	5 feet	Year-round	N/A	None	975	
14	45.99970	-83.89830	The raw water intake structure is about 550' offshore, north of DNR Harbor in DeTour Village.	30 feet	Year-round	100000 G	None	435	Water from St. Mary's River enters structure nearly every day, but under certain conditions Lake Huron provides raw water.
15	43.12611	-82.39084						0	
16	42.35018	-82.95545	The intake is located on the northwest shore of Belle Isle in the Detroit River.	20 intake openings	Year-round	120 mil G	Other Detroit intakes	3000000	3 alt. intakes supply 120 MG back-up. Intake serves raw water for Water Works, Northeast and Springwells plants.
17	42.22732	-83.12873	The SW Intake is in the Detroit River, in Canadian waters, between the Intl Boundary and Fighting Island.	Structure 70' deep	Year-round	30 mil G	Other Detroit Intakes	1000000	Intake structure is 70' deep and rests on bedrock foundation. It extends approx. 12' - 14' above water level.
18	45.04641	-83.43668		4' & 12'	Year-round	3.5 mil G	Thunder bay River	18000	Intakes utilize same transfer pipeline. Intake serves City of Alpena and Alpena Twp.
19	42.75554	-82.47361	Facility located 0.25 mile south of Detroit Edison St. Clair Power Plant on Recor Road.	20 feet	Year-round	1.85 mil G	Interconnect	3690	Interconnect is with City of St. Clair and City of Marine City. Storage equals approx. 3 days supply.
20	44.27643	-83.48888						0	
21	45.74247	-87.03574	Intake is located 450 feet east of tip of Sand Point.	45 feet	Year-round	12 hours	None	13500	
22	43.05489	-83.66871		N/A	Emergency only	N/A	None	0	This is a stand-by water supply for emergency use only.
23	45.84357	-86.99874	Crib in 40" of water, 1500" SE of Water Filtration Plant on Saunders Point in Little Bay de Noc.	40 feet	Year-round	1.7 mil G	None	4000	Start/stop operation: Plant is run for about 5 hours per day, usually 7:00am - 12:00pm.
24	43.04953	-86.24859	Buried intake bed, 2800 feet south of South Pier, 1200 feet west of State Park. 15' 70' 18' of water.	11.5 feet	Year-round	6.7 mil G	3 Wells (2 mil G), Ink. 2 mG	35000	Storage backup time is made up of a 1.5 mil G clearwell and a 5.2 mil G elevated storage. The alternative source is a buried crossfoot intake (2 mil G) and 3 wells (2 mil G).
25	42.97083	-86.24584	2 adjacent intake buildings visible from the lake between Grand haven and Port Sheldon at the end of M-45. 54" north intake extends 6,100', south intake extends 4,800'.	57 feet	Year-round	10 mil G	City of Wyoming PWS	300000	10 mil gallon storage is on site, additional 70 mil gallon capacity in Grand Rapids. Intakes could be removed from service for approx. 6 hours in summer at peak usage.
26	42.96250	-86.23751	2 adjacent intake buildings visible from the lake between Grand haven and Port Sheldon at the end of M-45. 54" north intake extends 6,100', south intake extends 4,800'.	44 feet	Year-round	10 mil G	City of Wyoming PWS	300000	10 mil gallon storage is on site, additional 70 mil gallon capacity in Grand Rapids. Intakes could be removed from service for approx. 6 hours in summer at peak usage.
27	42.97082	-86.24564						0	Emergency use only. Emergency 1 GR1
28	42.97120	-86.23920						0	Emergency use only. Emergency 2 GR1

## Public Water Supply Intake Locations - April 8, 2004

29	Emergency Intake	Grand Rapids		Lake Michigan									
30	Emergency Intake	Grand Rapids		Lake Michigan									
31	Emergency Intake	Grand Rapids		Lake Michigan									
32	Grosse Pointe Farms Water Plant	Grosse Pointe Farms/Highland Park	313-885-2100, 313-883-4479	Lake St. Clair	Wayne	29 Moross Road	Grosse Point	MI	48236	313-343-2328	2890	N/A	
33	Harbor Beach Water Works Emergency Intake	Harbor Beach	517-479-6462	Lake Huron	Huron	101 Ritchie Drive	Harbor Beach	MI	48441	517-479-9510	MDNR #92-08-0055	T16N_R15E	01
34	Harbor Beach Water Works	Harbor Beach	517-479-6462	Lake Huron	Huron	101 Ritchie Drive	Harbor Beach	MI	48441	517-479-9510	MDNR #92-08-0055	T16N_R15E	01
35	Holland Water Treatment Plant	Holland	616-399-9410	Lake Michigan	Ottawa	46 North Lakeshore Drive	Holland	MI	49423	616-399-9410	N/A	Park Township	
36	Huron Shore Regional Utility Authority	Huron Shore Regional Utility Authority	517-362-2643	Lake Huron	Iosco	247 Baldwin Resort Road	East Tawas	MI	48730	517-362-0050	N/A	T22N_R07E	36
37	Fair Haven	Ira Township Water Treatment Facility	810-725-7231	Lake St. Clair	St. Clair	7069 Meldrum Road	Fair Haven	MI	48023	810-725-7231	N/A	N/A	
38	Emergency Intake	Ishpeming		Lake Sally	Marquette		Ishpeming	MI					
39	Emergency Intake	Ishpeming		Lake Angeline	Marquette		Ishpeming	MI					
40	Malone Bay Water Intake	Isle Royale National Park	906-482-4824	Lake Superior	Keweenaw		Mohawk	MI	49950	906-482-0984			
41	Mott Island Water Intake	Isle Royale National Park	906-482-4824	Lake Superior	Keweenaw		Mohawk	MI	49950	906-482-0984			
42	Windigo Water Intake	Isle Royale National Park	906-482-4824	Lake Superior	Keweenaw		Mohawk	MI	49950	906-482-0984			
43	Amygdaloid Water Intake	Isle Royale National Park	906-482-4824	Lake Superior	Keweenaw		Mohawk	MI	49950	906-482-0984			
44	Rock Harbor Lodge	Isle Royale National Park	906-482-4824	Lake Superior	Keweenaw		Mohawk	MI	49950	906-482-0984			
45	Zeba Water Treatment Plant	Keweenaw Bay Indian Community	906-222-2214	Keweenaw Bay/Lake Superior	Baraga	107 Beartown Road	Baraga	MI	49908	906-353-7803	U.S. EPA	T51N_R32W	19
46	Lake Township Water System	Lake Charter Township	616-465-7704, 616-930-6601	Lake Michigan	Berrien	P.O. Box 818	Bridgman	MI	49106	616-465-3850		Lake Township	07
47	L'anse Water Treatment Plant	L'Anse	906-524-6050	Keweenaw Bay/L'Anse Bay	Baraga	101 N. Main Street	L'Anse	MI	49946	906-524-6116, 906-542-5880/5882	N/A	T50N_R33W	05
48	Lighthouse Park Water Intake	Lighthouse Park	877-802-9987	Lake Huron	Huron	7320 Lighthouse Road	Port Hope	MI	48468	517-269-6404	WSSN #03860	N/A	
49	Ludington Water Plant (old)	Ludington	231-843-8830	Lake Michigan	Mason	501 North Lakeshore Drive	Ludington	MI	49431	231-843-8830	N/A		
50	Ludington Water Plant (new)	Ludington	231-843-8830	Lake Michigan	Mason	501 North Lakeshore Drive	Ludington	MI	49431	231-843-8830	N/A		
51	Mackinac Island Water Filtration Plant	Mackinac Island	906-847-6060	Lake Huron	Mackinac	Huron Street	Mackinac Island	MI	49757	906-847-6060	2970	N/A	
52	Manistique Water Plant	Manistique	906-341-2133	Indian River	Schoolcraft	Intake Park Road	Manistique	MI	49854	906-341-2281	WSN 4040	T41N_R16W	01
53	Marine City Water Works	Marine City	810-765-8087, 810-765-8849	St. Clair River	St. Clair	229 South Water Street	Marine City	MI	48039	810-765-8087/8849	WSSN #4090	N/A	
54	Marquette Water Department	Marquette	906-228-6220	Lake Superior	Marquette	161 County Road 492	Marquette	MI	49855	906-228-6220			
55	Shiras Pool	Recreation Department	906-228-0400	Lake Superior	Marquette	#1 Peter White Drive	Marquette	MI	49855	906-228-0460	MI #0047112	T48N_R25W	02
56	Marysville Water Filtration Plant	Marysville	810-364-8843, 810-242-9383	St. Clair River	St. Clair	1535 River Road, P.O. Box 389	Marysville	MI	48040	810-364-8460, 810-364-6050	N/A	St. Clair Township	
57	Menominee County Administration	Menominee	906-863-5568	Green Bay	Menominee	Henes Park	Menominee	MI	49858	906-869-7779	N/A	N/A	
58	Wilfred L. Lepage Raw Water Pumping Plant (42")	Monroe Water Department	734-457-3202	Lake Erie	Monroe	6375 Pointe Aux Peaux Road	Monroe	MI	48166	734-241-5947	N/A	T28N_R65W	10
59	Wilfred L. Lepage Raw Water Pumping Plant (30")	Monroe Water Department	734-457-3202	Lake Erie	Monroe	6375 Pointe Aux Peaux Road	Monroe	MI	48166	734-241-5947	N/A	T28N_R65W	10

## Public Water Supply Intake Locations - April 8, 2004

29	42.97143	-86.23452						0	Emergency use only. Emergency 3 GR1
30	42.96827	-86.22840						0	Emergency use only. Emergency 2 GR2
31	42.96545	-86.23283						0	Emergency use only. Emergency 1 GR2
32	42.40313	-82.87852	Intake is located approximately 1500 feet from seawall at Pier Park.	16 feet	Year-round	2.5 mil G	Detroit Public Water Supply	16000	Common intake with Highland Park.
33	43.86167	-82.64667	Huron. Intake is located 75' north of the west end of the north breakwall and runs due east.	20 feet	Year-round	9 mil G	Primary Intake	4000	Emergency Intake is approximately 700' north of primary intake.
34	43.85833	-82.64585	Huron. Intake is located 75' north of the west end of the north breakwall and runs due east.	20 feet	Year-round	9 mil G	20" Emergency Intake	4000	Emergency Intake is approximately 700' north of primary intake.
35	42.80000	-86.22785	Facility is located 0.8 mile west of Tunnel Park and 1.5 miles north of Holland State Park.	48 feet	Year-round	4.5 mil G	City of Wyoming PWS	33000	Holland shares three interconnects with the City of Wyoming.
36	44.26944	-83.41472		35 feet	Year-round	N/A	None	0	
37	42.68056	-82.67083		8 feet	Year-round	N/A	New Baltimore Water Department	5000	
38	46.47080	-87.65780						0	
39	46.47080	-87.65780						0	
40	47.98425	-88.79929	Located east of Siskiwit Falls.	30 feet	Spring-Fall	1500 G	None	2	Water used for household uses, and drinking water.
41	48.10499	-88.54204	Located at the southern end of Mott Island.	30 feet	Spring-Fall	34000 G	None	100	Water used for household uses, and drinking water.
42	47.90944	-89.16028	Located at the east end of Washington Harbor.	30 feet	Spring-Fall	15000 G	None	20	Water used for household uses, and visitor drinking water.
43	48.13621	-88.65726	Located at the southwestern end of Amygdaloid Island.	30 feet	Spring-Fall	1500 G	None	2	Water used for household uses, and drinking water.
44	48.14498	-88.48168	Located at Rock Harbor Lodge.	30 feet	Spring-Fall	60000 G	None	200	Water used for household uses, lodge, and restaurant facilities.
45	46.80639	-88.42362		N/A	Year-round	67000 G	L'Anse Water Treatment Plant	500	
46	41.96619	-86.58248	Donald C. Cook Nuclear Power Plant. Intake is approx. 3,500 ft WSW of facility.	33 feet	Year-round	N/A	Bridgman, St. Joseph PWS	5000	Water is treated as it is drawn into the plant. Raw water storage is approximately 40, 000 G.
47	46.78648	-88.44263	Intake on east side of Keweenaw Bay, north of L'Anse. Shore intake pumps water 300 ft to Treatment Plant.	41 feet	Year-round	1 mil G	None	2500	New Treatment Plant in 1994. Rated 1.8 M.G.D. Direct Filtration Plant.
48	44.02280	-82.80190		6 feet	05/01-10/01	24 hours	None	300	
49	43.96024	-86.46921		24 feet	Year-round	4 hours	New intake facility	15000	Both the Old Ludington and New Ludington Water Treatment Plants are active.
50	43.96187	-86.46622		24 feet	Year-round	4 hours	Public Water Supply	15000	
51	45.85417	-84.59999	Intake is located 560 feet off the shore of the ESE corner of the island.	36 feet	Year-round	1.25 mil G	None	15000	Water intake supplies water for 500 year-round residents. During mid-season, the intake supplies water for 15,000 visitors.
52	45.97720	-86.24610	Intake is approximately 25 yards upstream of a low head dam.	5.5 feet	Year-round	1 mil G	2 Artesian wells	3900	
53	42.71653	-82.49034	Marine City, approximately 200 feet north of Lighthouse, approximately 150 feet from the shore.	40 feet	Year-round	200 K G	None	7000	Fax: 810-765-1015. Only 350,000 gallons storage in distribution system currently, increasing to 750,000 gallons by late 1999.
54	46.54463	-87.36575		60 feet				0	
55	46.55440	-87.37510	Intake is located on the south side of the Merchandise Dock, in Marquette's Upper Harbor.	4 feet	06/01 - 09/15	N/A	None	30000	Water is used for public swimming facility.
56	42.90694	-82.46390	water filtration plant on the U.S. side of the St. Clair River. Second intake approximately 480' east of seawall.	30 feet, 2 intakes	Year-round	2 mil G	Interconnect	10015	Intake services the City of Marysville and St. Clair and Kimball Townships.
57	45.13778	-87.59223		20 feet	Year-round	12-24 hrs	None	0	
58	41.94173	-83.24994	Pointe Aux Peaux Rd. in Frenchtown Twp. 30" Intake Structure located 5574 ft. SE of the foot of Pointe Aux		Year-round	6000000 G	Other intake, 0.75 miles apart	0	The 6,000,000 gal. finished water storage constitute approximately 12 hours of normal use at summer demands levels.
59	41.93667	-83.23862	Pointe Aux Peaux Road 42" intake structure located 1,555 ft. off the foot of Pointe Aux Peaux Road		Year-round	6000000 G	42" intake	0	The 6,000,000 gal. finished water storage constitute approximately 12 hours of normal use at summer demands levels.

## Public Water Supply Intake Locations - April 8, 2004

60	Mott Island Water Intake	Mott Island	906-337-2229	Lake Superior	Keweenaw	Keweenaw HCl, P.O. Box 607	Eagle River	MI	49924	906-337-2229			
61	Mount Clemens Water Facilities	Mount Clemens	810-469-6892	Lake St. Clair	Macomb	36570 Jefferson	Harrison Township	MI	48045	810-469-6889	WSSN #4510	French Claims Area	
62	City of Muskegon Water Filtration Plant	Muskegon	231-759-0192	Lake Michigan	Muskegon	1900 Beach Street	Muskegon	MI	49441	231-759-0192	WSSN #4570		
63	Muskegon Heights Water Filtration Plant	Muskegon Heights	231-780-3415, 231-733-4547	Lake Michigan	Muskegon	2719 Seminole Road	North Shores	MI	49441	231-780-3415, 231-733-4547	WSSN # 04580	N/A	
64	Muskegon Heights Water Filtration Plant	Muskegon Heights											
65	Muskegon Heights Water Filtration Plant	Muskegon Heights											
66	Emergency Intake	Negaunee	906-475-9991	Teal Lake	Marquette	600 Cherry Street	Negaunee	MI	49866	906-475-9991	N/A	N/A	
67	New Baltimore Water Department	New Baltimore	810-725-7300	Lake St. Clair	Macomb	36280 Front Street	New Baltimore	MI	48047	810-725-7300	N/A	N/A	
68	New Buffalo Water Filtration Plant	New Buffalo	616-469-0381	Lake Michigan	Berrien	300 Marx Drive	New Buffalo	MI	49117	616-469-0381	N/A	N/A	
69	Emergency Intake	New Buffalo		Lake Michigan									
70	Ontonagon Village Water Plant (Emergency Only)	Ontonagon	906-884-2343	Lake Superior	Ontonagon	Birch Street	Ontonagon	MI	49953	906-884-2343	N/A	T52N_ R40W	25
71	Shoreline Intake, Ontonagon Filtration Plant	Ontonagon	906-884-2343	Lake Superior	Ontonagon	Birch Street	Ontonagon	MI	49953	906-884-2343	N/A	T52N_ R40W	25
72	Emergency Intake	Sewer and Water Authority	517-670-0920, 517-874-6008	Lake Huron	Huron	110 Bay Street	Port Austin	MI	48467	517-738-7213	WSSN #15460	N/A	
73	Port Austin Water Treatment Plant	Port Austin Area Sewer and Water Authority	517-738-7213, 517-670-0920, 517-874-6008	Lake Huron	Huron	110 Bay Street	Port Austin	MI	48467	517-738-7213, 517-738-8366	WSSN# 05460	T19N_ R13E	30
74	City of Port Huron Water Filtration Plant	Port Huron	810-984-9780	St. Clair River	St. Clair	1200 Pine Grove Avenue	Port Huron	MI	48060	810-984-9781	N/A	R17E	03
75	Rock Harbor Water Intake	Rock Harbor	906-337-2229	Lake Superior	Keweenaw	Keweenaw HCl, POB 607	Eagle River	MI	49924	906-337-2229			
76	City of Rockford Water Treatment Plant	Rockford	616-866-1537	Rogue River	Kent	10 East Bridge Street	Rockford	MI	49341	616-866-0560	MDNR #90-09-0111	T09N_ R11W	36
77	Saginaw-Midland	Saginaw-Midland	517-759-1640	Lake Huron	Arenac	522 Ezra Rust Drive	Saginaw	MI	48601	517-759-1640	N/A	N/A	
78	Saginaw-Midland	Saginaw-Midland	517-759-1640	Lake Huron	Arenac	522 Ezra Rust Drive	Saginaw	MI	48601	517-759-1640	N/A	N/A	
79	Sault Ste. Marie Water Treatment Facility	Sault Ste. Marie	906-632-3344 (city police)	Upper St. Marys River/Lake Superior	Chippewa	1634 West 24th Street	Sault Ste. Marie	MI	49783	906-632-8981	N/A	N/A	
80	South Haven Water Filtration Plant	South Haven	616-637-5151	Lake Michigan	Van Buren	60 Water Street	South Haven	MI	49090	616-637-0715	WSSN #6100	T01S_ R17W	09
81	City of St. Clair Water Treatment Plant	St. Clair	810-329-3000	St. Clair River	St. Clair	300 North Riverside	St. Clair	MI	48079	810-329-5276	WSSN #6270	N/A	
82	City of St. Ignace Water Treatment Plant	St. Ignace	906-643-1911	Lake Huron	Mackinac	999 Church Street	St. Ignace	MI	49781	906-643-9670	WSSN #6290	N/A	
83	City of St. Ignace Water Treatment Plant	St. Ignace	906-643-1911	Lake Huron	Mackinac	999 Church Street	St. Ignace	MI	49781	906-643-9670	WSSN #6290	N/A	
84	St. Joseph Water Filtration Plant	St. Joseph	616-983-1240	Lake Michigan	Berrien	1701 Lions Park Drive	St. Joseph	MI	49085	616-983-1240	N/A	T4S_ R18W	27
85	The Old Club	The Old Club, Harsen's Island	810-748-9931	St. Clair River	St. Clair	9900 S. Channel Drive	Harsen's Island	MI	48028	810-748-9931	N/A	N/A	
86	Traverse City Water Treatment Plant	Traverse City	616-922-4720	East Arm of Grand Traverse Bay	Gr. Traverse	2010 Eastern Avenue	Traverse City	MI	49686	616-922-4920	WSSN #6640	T27N_ R10	06
87	Canal Emergency Steam Plant	U.S. Army Corp of Engineers	906-632-3311	Upper St. Mary's River, North Canal	Chippewa	St. Mary's Falls Canal	Sault Ste. Marie	MI	49783	906-632-3311	N/A	T47N_ R1E	6
88	Lexington Water Treatment Plant	Village of Lexington	810-359-5901	Lake Huron	Sanilac	7226 Lester	Lexington	MI	48450	810-359-8852	N/A	Lexington Township	36
89	White Pine Water Intake	White Pine		Lake Superior	Ontonagon		White Pine	MI					
90	Windingo Water Intake	Windingo	906-337-2229	Lake Superior	Keweenaw	Keweenaw HCl, POB 607	Eagle River	MI	49924	906-337-2229			



## Public Water Supply Intake Locations - April 8, 2004

60	48.01000	-88.50500						0	
61	42.55825	-82.82481		6-8 feet	Year-round	24 hours	Detroit Public Water Supply	0	
62	43.20750	-86.34751	Facility is located south of Pere Marquette Park and south of Muskegon Pier.	40 feet	Year-round	14.5 mil G	None	50000	Intake pipe is a single 60" line extending into Lake Michigan.
63	43.18055	-86.32779	Treatment Plant is located 3000 feet east of pump station.	37 feet	Year-round	5 mil G	None	40000	There is a limited amount of back up water available from surrounding communities.
64	43.18223	-86.32720						0	
65	43.18242	-86.32170						0	
66	46.50780	-87.61440		26 feet	Emergency only	N/A	None	4700	
67	42.67778	-82.73195	Intakes are located 1750 feet off shore from wet well located at 36280 Front Street.	10 feet	Year-round	800000 G	New Baltimore Water Department	5000	
68	41.80194	-86.76444	Intake crib is 3000 ft straight out from water intake plant. Water intake plant is two blocks from water intake plant that is located on shores of Lake Michigan.	25 feet	Year-round	800000 G	None	3000	2.0 mill G water treatment plant that serves city of New Buffalo and portions of New Buffalo township. This is the only water source.
69	41.80111	-86.76362						0	Emergency use only.
70	46.87750	-89.34440	Rainy Well System located off Maple Street and Lakeshore Drive.	N/A	Emergency Only	N/A	None	0	This system has been decommissioned by DEQ but can still be used temporarily in emergency situations.
71	46.88432	-89.30234	Ontonagon River and 3000 feet from shore of Lk Superior.	35 feet	Year-round	4-5 hours	Well system	0	Alt. Rainy Well System located off Maple Street and Lakeshore Drive.
72	44.05278	-82.99501	Generally follows harbor breakwall. Critical area marked with dashed line.	10 feet	Back-up	3-30 hours	None	0	
73	44.05344	-83.00181		12-15 feet	Year-round	3-30 hours	None	2000	Census population is 815, summer population is 2000.
74	42.98723	-82.42432	Facility is located in Pine Grove Park, east of Port Huron Hospital, 1/2 mile south of the mouth of St. Clair River and Blue Water Bridge. Intakes appx 150 feet into river.	35 feet	Year-round	8 mil G	None	55000	Additional storage with two 2-million gal. settling basins and one 4 million gallon finished water reservoir.
75	48.01500	-88.34830						0	
76	43.11930	-85.56200	Intake is a 15' by 40' infiltration bed located in river channel, west of water treatment plant.	7 feet	Year-round	1 mil G	Upstream Intake	4000	15' by 40' infiltration bed, containing 3/8" pea gravel overlain by 1" wash stone and river bottom stone. Air/water backwash system rated at 3000 GPM.
77	44.10782	-83.52638						0	
78	44.10831	-83.54999						0	
79	46.49139	-84.42140	Intake pipe is 1,600 feet long extending into the Upper St. Marys River.	40 feet	Year-round	2.7 mil G	None	14649	Intake is 36" diameter, 1,600' long pipe set in 40' of water, elbowed up 10' and is covered with a grate.
80	42.39886	-86.30506		34 feet	Year-round	3.73 mil G	None	6243	
81	42.82533	-82.48132	Raw water pumping building, just south of the St. Clair Inn or just south of intersection of Vine Street and M-29.	30 feet	Year-round	1 mil G	None	5300	
82	45.85860	-84.70390	Intake is located 6 miles east from the Mackinac Bridge, along the north shore.	20 feet	Year-round	1 mil G	None	3500	Facility can shut down for up to 8 hours with prior notice.
83	45.85860	-84.70390	Intake is located 6 miles east from the Mackinac Bridge, along the north shore.	20 feet	Year-round	1 mil G	None	3500	Facility can shut down for up to 8 hours with prior notice.
84	42.10115	-86.49893	Intake is located 1500 feet straight off the low service building located at the water's edge.	N/A	Year-round	2.5 mill G	Benton Harbor and Lake Twsp.	33000	Alternative sources for water are the Benton Harbor and Lake Township public water supplies.
85	42.57400	-82.57450						0	
86	44.76940	-85.53791	Intake crib is located on a line between the low service pumping station and the Grand Traverse Resort water tower 4,100 feet offshore.	43 feet	Year-round	7 mil G	None	22000	No additional intakes or wells available for backup. Storage consists of elevated and buried tanks and reservoirs.
87	46.50380	-84.35500	Intake water is supplied from a 4" pipe which runs from a manhole that is located 51' west of the Emergency Dam Building.	Intake is in a well	11/1-6/1	N/A	Public Water Supply	0	No longer used. DC-139-69, DC-139-85
88	43.26444	-82.51306	Intake is located 1600 feet off shore.	14 feet	Year-round	.5 mil G	Back-up Well	2000	Putting in new intake further out beginning in fall 1999.
89	46.83583	-89.57417						0	
90	47.84170	-89.01500						0	

## Public Water Supply Intake Locations - April 8, 2004

91	Wyandotte Filtration Plant	Wyandotte, Department of Municipal Service	734-324-7145	Detroit River	Wayne	2555 Van Alstyne	Wyandotte	MI	48192	734-324-7142	WSSN #7210	N/A	
92	Wyoming Water Treatment Plant	Wyoming	616-399-6511	Lake Michigan	Ottawa	16700 New Holland Street	Holland	MI	49424	616-669-5780	N/A	N/A	
93	City of Alpena Water Treatment Plant			Lake Huron									

## Public Water Supply Intake Locations - April 8, 2004

91	42.20777	-83.13944	Intake located 1,700 feet east from shorewell in the Detroit River.	20 feet	Year-round	5.07 mil G	3 interconnects with Detroit	30825	Intake pipe is 42" concrete pipe terminating at 12 foot square by 7.5' timber crib. Capacity is 18 MGD.
92	42.85425	-86.22696	East shore of Lk Michigan between Holland and Grand Haven located appx 4,400 feet from shore in double crib.	50 feet	Year-round	7.5 mil G	Interconnect with Grand Rapids	170000	to 2 days. Grand Rapids also uses Lk Michigan water. Storage is for max. 1
93	45.04613	-83.44119						0	

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, September 30, 2015 8:49 AM  
**To:** McMillan, Dave  
**Subject:** RE: Michigan Report

Sorry to hear that you won't be at the full conference. I'm visiting my sister in Austin the week before the ASDWA conference in my trip to Texas.

Hang in there – it's events like Toledo, Charleston, Flint and these legionella outbreaks that make others realize that state drinking water programs are vital.

As for those Section Manager jobs – you need to adopt the Benzie style of management known as the 3Ds – delegate, deflect and dodge. In that case, I would delegate by naming Acting Section Managers, even if they were "informal." But only you know what can be done and what needs to be done.

Enjoy San Antonio – sounds like you need a break.

Richard

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**From:** McMillan, Dave [<mailto:DAVE.MCMILLAN@Illinois.gov>]  
**Sent:** Wednesday, September 30, 2015 8:10 AM  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Michigan Report

I hear you. I am getting too old for covering three Section Manager jobs and a legionella outbreak.

The state is not paying travel and already owes me about \$1,000. So I am just going to the Board meeting. Brenda and I are leaving Monday night to go visit her sister in San Antonio then back to Springfield. Time off this year has not happened, so between now and the end of the year I have a bunch of time to use or lose.

Catch you later-  
Dave

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**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Tuesday, September 29, 2015 3:15 PM  
**To:** McMillan, Dave  
**Subject:** Michigan Report

Dave,

Better late than never. It's all Flint all day all the time. I have a briefing for the Governor due in the morning. I think I will be sleeping here tonight.

Will I see you in Fort Worth?

Richard

Richard Benzie, P.E., Chief

Field Operations Section  
Office of Drinking Water and Municipal Assistance, MDEQ  
517-284-6512

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**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, March 16, 2012 4:25 PM  
**To:** Howard, Brock (DEQ)  
**Subject:** Flint/Genesee Meeting

Your presence is warranted because one of the major issues may be disinfection byproducts if Flint decides to use their WTP on a routine basis.

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**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, April 27, 2012 3:37 PM  
**To:** 'Michelle Lee'  
**Cc:** Prysby, Mike (DEQ); 'Linda Hills'  
**Subject:** RE: Genesee County

Michelle,

I was unaware that Flint did not include the Karengoodi Water Authority project in their original needs survey submittal. As suggested below, please unlump this project in order to assign relative costs to Flint and Genesee County and include a project on Flint's survey for their share. I believe Mike Prysby is still trying to get an indication of the city's commitment to participating in this project and at what percentage of the whole project. The representative of the Emergency Manager at the meeting I attended expressed his support for the city's participation but indicated they were not quite ready to sign papers until a few more tees were crossed and eyes dotted. As I have stated previously, it is a political hot potato with Detroit not wanting to lose these customers and Flint currently operating under a state appointed Emergency Manager, but I think we may be able to get something to you by the end of the time for submitting modifications if not before data upload. Thanks.

Richard

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**From:** Linda Hills [<mailto:Linda.Hills@cadmusgroup.com>]  
**Sent:** Friday, April 20, 2012 3:24 PM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Michelle Lee  
**Subject:** Genesee County

Richard – Project 1010 on this survey is for a new source and WTP upgrades for Genesee County, Sanilac County, Lapeer County and the City of Flint.

Can you provide more updated information since the September 2009 PER? Are they still pursuing this project? Can you provide anything showing a level of “commitment?”

If we can allow this project, we think it would be most appropriate to unlump it into Genesee County and Flint's respective shares.

Thanks

Linda

Linda Hills  
Senior Associate  
The Cadmus Group, Inc  
406-457-5227

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, June 13, 2012 4:19 PM  
**To:** 'Michelle Lee'  
**Cc:** 'Linda Hills'; Prysby, Mike (DEQ)  
**Subject:** RE: Flint Needs

Below is Mike Prysby's response to your question. As you can see, the county does not want their position to be publicly known at this time. I don't know to what extent the county would "scale down" the project and I'm not sure they even know at this time because it is truly a last resort.

Richard

From Mike Prysby:

Genesee County has mentioned to me verbally several times that they will proceed with KWA with or without Flint. They also indicated that the project could be scaled down. As far as I am aware the county has not gone public with this....since this could be one of their trump cards they're not wanting to play prematurely (if they need to) depending on the long-term alternative Flint commits to. Hope this helps.

Michael Prysby, P.E.  
Acting District Supervisor  
RMD, MDEQ  
335-6122

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, June 13, 2012 11:45 AM  
**To:** 'Michelle Lee'  
**Cc:** Linda Hills; Prysby, Mike (DEQ)  
**Subject:** RE: Flint Needs

That is a question for Mike Prysby to answer so I will discuss it with him to see what the county has planned should the city not participate in the KWA project. One of us will respond after our discussion.

However, I believe the city will eventually participate. It is my understanding that Flint's share of the raw water transmission system (intake, shore well, pumping station(s), transmission mains, storage tanks) has been identified. But since the city is unable to commit at this time, Genesee County decided they would initiate construction of the intake and shore well without the city's proportional share obligated. I suspect they are proceeding on the belief that Flint will eventually participate and at that time, be required to contribute their full share for the entire project. Like me, the county believes the city will not be able to resist the opportunity to operate their water treatment plant on more than a standby basis that this project will offer. However, the city is currently in financial distress and under the direction of an Emergency Manager appointed by the Governor. As a result, every financial commitment is being closely scrutinized until the city regains their financial footing. As an example, I believe the city has declined a DWRF loan next year for distribution system improvements even though it was being proffered with 50% loan forgiveness due to the city's disadvantaged status. The acting city manager said he just couldn't ask residents to go further in debt even if it is only for half the cost of the project. He said that when your pockets are empty, further debt is irresponsible. One of the advantages of an Emergency Manager in Michigan is the ability to reopen employee contracts and negotiate reductions



in costs. Hopefully, the reduced expenses achieved by this process will allow the city to emerge from their current status and once again make future obligations to ensure continuity of services, including the water system.

Mike or I will get back to you after we determine what Genesee County plans to do if the city fails to join the KWA.

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**From:** Michelle Lee [<mailto:Michelle.Lee@cadmusgroup.com>]  
**Sent:** Wednesday, June 13, 2012 10:43 AM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Linda Hills; Prysby, Mike (DEQ)  
**Subject:** RE: Flint Needs

Richard-

We have decided to send the information for the KWA project to EPA for review. Can you provide us with information regarding Genesee County's plans if the City of Flint doesn't participate in the KWA project?

Thanks,  
Michelle Lee  
The Cadmus Group, Inc.  
2620 Colonial Drive, Ste. A  
Helena, MT 59601  
(406) 457-5225  
[michelle.lee@cadmusgroup.com](mailto:michelle.lee@cadmusgroup.com)

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**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Monday, June 11, 2012 1:17 PM  
**To:** Michelle Lee; Prysby, Mike (DEQ)  
**Subject:** RE: Flint Needs

Michelle,

Michelle,

If you are not willing to accept the city's tentative commitment (is that an oxymoron?) to KWA, will you adjust the percentages of this project that you assigned to Genesee County to reflect the fact that they will have to adsorb the costs not being born by the city of Flint? There is no one else to pay the city's share and the County has signed a contract to initiate this project with or without the city's participation.

I suspect the city will end up participating in this project, but they may be using their current position for leverage in getting the Detroit Water & Sewerage Department to reconsider the current ban on blending water from other sources. If they can achieve that goal, they could use a combination of DWSD treated water and raw water from the KWA that would allow them to operate the Flint water treatment plant on a daily basis.

Richard

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**From:** Michelle Lee [<mailto:Michelle.Lee@cadmusgroup.com>]  
**Sent:** Monday, June 11, 2012 1:38 PM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint Needs

Richard and Mike-

We reviewed the letter from the City of Flint that you submitted to document commitment by the City of Flint to participate in the KWA project. Based on the letter and the e-mail below, it appears that Flint is still considering their options and are not committed to the KWA project; therefore, we have not included the KWA project in the City of Flint's survey.

Thanks,  
Michelle Lee  
The Cadmus Group, Inc.  
2620 Colonial Drive, Ste. A  
Helena, MT 59601  
(406) 457-5225  
[michelle.lee@cadmusgroup.com](mailto:michelle.lee@cadmusgroup.com)

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**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]  
**Sent:** Monday, May 21, 2012 1:24 PM  
**To:** Needs Survey Submittals  
**Cc:** Michelle Lee; Benzie, Richard (DEQ)  
**Subject:** Flint Needs

Attached is a letter from the city of Flint that states their support and intent on proceeding with the Karegnondi Water Authority (KWA) project. The city is continues to investigate several options within the overall project to determine the volume of KWA water that they will ultimately purchase. In most recent discussions with the city, they are considering to have the ability to purchase between 20 and 25 MGD of water from the KWA.

If you have any further questions or need any additional information; please don't hesitate to call me or send me an e-mail.

Michael Prysby, P.E.  
Acting District Supervisor  
RMD, MDEQ  
517 335-6122

**Rosenthal, Adam (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Monday, August 03, 2015 9:57 AM  
**To:** 'Michael Glasgow'  
**Subject:** RE: PbCu Cert form

Morning Mike, I also need copies of all 68 consumer notices. I have 1 from 401 E. Newall St., so 67 more.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Friday, July 31, 2015 10:28 AM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Re: PbCu Cert form

Adam,

Here is the lead & copper report. I have also sent a hard copy out via USPS.

On Thu, Jul 30, 2015 at 9:33 AM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Morning Mike, I'm preparing the 90<sup>th</sup> percentile letter and I need your lead copper certification form with the cert of notification to the customers. What I have are 68 results that are routine from 1/1 – 6/30/15. The link below is for the form if you don't have one.

[http://www.michigan.gov/deq/0,4561,7-135-3313\\_3675\\_3691-61640--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3691-61640--,00.html)

thanks,

Adam Rosenthal, EQA

MDEQ – Office of Drinking Water and Municipal Assistance

Lansing District – Constitution Hall 1SW

PO Box 30242

Lansing, MI 48909

517-284-6644

fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:

[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

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Mike Glasgow  
Utilities Administrator  
City of Flint  
1101 S. Saginaw St.  
Flint, MI 48502  
(810)766-7135 ext. 2602

## **Rennaker, Joanne (DEQ)**

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**From:** Deltoral, Miguel <deltoral.miguel@epa.gov>  
**Sent:** Friday, February 27, 2015 5:59 AM  
**To:** Crooks, Jennifer; Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Poy, Thomas; Schock, Michael; Porter, Andrea  
**Subject:** Re: HIGH LEAD: FLINT Water testing Results

Jen/all - I think things got garbled in translation...

What I was saying is that where you find Pb values that high, it is usually due to particulate lead. Not always, but generally. Particulate lead is released sporadically from lead service lines, leaded solder and leaded brass in a number of ways and folks tend to discount these values as anomalies, but particulate lead release is a normal part of the corrosion process and it is universal (common) in all systems. It's just that it is not captured as often by the infrequent LCR sampling. If systems are pre-flushing the tap the night before collecting LCR compliance samples (MDEQ still provides these instructions to public water systems) this clears particulate lead out of the plumbing and biases the results low by eliminating the highest lead values. If systems are pre-flushing and still finding particulate lead, the amount of particulate lead in the system can be higher than what is being detected using these 'pre-flushed' first-draw samples. My point on that was that people are exposed to the particulate lead on a daily basis, but the particulate lead is being flushed away before collecting compliance samples which provides false assurance to residents about the true lead levels in the water.

Some quick notes on particulate lead release:

- Fe/Mn can transport lead from the lead service lines into the home. The lead sorbs onto the Fe/Mn particles. In GW systems, Fe/Mn can come from the source water and more Fe from the water mains. In SW systems, the Fe typically is released from the water mains.
- Lead released from lead service lines can also 'seed' galvanized iron pipes inside the homes. Again, the lead sorbs onto the iron on the pipes and be released sporadically. Generally, the higher the flow, the more Fe and Fe+Pb particulate you will likely get.
- If there is a partial lead service line (lead connected to copper) you can get additional lead release due to galvanic corrosion.
- Leaded brasses and solder can also release particulate lead under certain circumstances.
- The particulate can contain very high concentrations of lead (hundreds to thousands of ppb Pb) which is a much higher concentration than lead paint, so even small particles can result in high lead values.
- If the lead service line was disturbed (water main repair/replacement, meter installation repair/replacement, service line leak repairs, etc.) you can have VERY high lead levels in the scale and sediment that is dislodged from the inside of lead service lines. Here in Chicago, during a partial lead service line replacement, we collected the scale and sediment that came into the home and we found 300,000+ ug/L lead in the scale; 125,000 ug/L Pb in the sediment. Very dangerous.
- Higher levels of PO<sub>4</sub> (3-4 mg/L Oriho) seem to reduce the amount of particulate Pb that is released in the absence of physical disturbances to the lead lines. Doesn't stop it entirely, but should generally reduce the occurrence. Caveat - Other water quality issues can change the chemical complexes that form on the pipe, so cleaner sources with more consistent WQ form more predictable scale complexes.

If I remember correctly, Detroit is feeding PO4 for the LCR, but since Flint is no longer part of that interconnection, I was wondering what their OCCT was. They are required to have OCCT in place which is why I was asking what they were using.

Mike Schock is our resident expert and may be able to help out with the simultaneous compliance (Pb & DBPs) so I would suggest that folks give him a call.

Miguel A. Del Toral  
Regulations Manager  
U.S. EPA R5 GWDWB  
77 West Jackson Blvd, (WG-15J)  
Chicago, IL 60604  
Phone: (312) 886-5253

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**From:** Crooks, Jennifer  
**Sent:** Thursday, February 26, 2015 04:15 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Deltoral, Miguel; Poy, Thomas  
**Subject:** HIGH LEAD: FLINT Water testing Results

Thank you, Mike. These results are dated 2/18/15, so they're probably different results than the results Adam had, but they still have to be included in with compliance calculation of the 90<sup>th</sup> percentile. What dates are the earlier compliance samples?

Yes, the stagnation of the water would increase the lead levels, and I'm glad you're following up with the City to get the lead levels reduced for [PHI] home—which will hopefully be effective for her neighbors because they are also most likely being exposed to these high lead levels. Miguel reminded me this morning, there are no safe levels of lead in drinking water.

I talked with Miguel Del Toral about his knowledge on research on lead. He said that high levels of iron, usually bring high levels of lead. The large amount of black sediment at [PHI] home, is most likely particulate lead, Miguel said, where the lead actually bonds to the iron sediment. While the particulates of lead/iron are small, they're very highly concentrated with lead—up to 95% lead.

Miguel was wondering if Flint is feeding Phosphates. Flint must have Optimal Corrosion Control Treatment—is it Phosphates? Or is it pH/Alkalinity Adjustment? The reason he asks, is because systems using the pH/Alkalinity adjustment have problems with lead levels in the 100's or higher—and they have problems with random lead particulate matter in the distribution system. Miguel said that we all know that flushing regularly helps reduce the lead concentrations, but not immediately. The City can't just flush in advance of taking the compliance samples, they have to flush the lines on a regular schedule.

The problem with high lead issues, is that the water has so many different variables, that it's hard to pinpoint what is causing what problem where. From a public health perspective, can we assume that the high lead levels in [PHI] neighborhood are isolated to just her area? Or are they more widespread?

Please feel free to contact Miguel directly—312-886-5253; Deltoral.miguel@epa.gov.

Jennifer

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**From:** Prysby, Mike (DEQ) [mailto:PRYSBYM@michigan.gov]  
**Sent:** Thursday, February 26, 2015 10:25 AM  
**To:** Crooks, Jennifer

Cc: Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
Subject: RE: HIGH LEAD: FLINT Water testing Results

Jennifer,

I recall Adam showing me a high lead/copper sample result (perhaps it was this one)....as part of the city's routine lead-copper monitoring. If so, it was a stagnated sample as part of the sampling protocol. Adam mentioned that all other samples were below the AL...and the city will not exceed the lead AL. I will confirm this. The city; however, needs to take further action to help address [PHI] concern. The type of plumbing needs to be identified and sample tap location within the premise plumbing. They should offer to re-sample for PB after flushing the tap to demonstrate that flushing the tap will reduce the lead concentration. The city also needs to provide other lead-reduction strategies to [PHI]

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

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**From:** Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]  
**Sent:** Thursday, February 26, 2015 10:53 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Poy, Thomas; Deltoral, Miguel  
**Subject:** HIGH LEAD: FLINT Water testing Results

Hi, Steve and Mike. Thanks for talking with me yesterday, Steve, about the most recent TTHM results. We'll look forward to receiving them whenever you get them back from the lab.

However, the main purpose of my email is to alert you to the high lead levels reported to a citizen yesterday by Flint Water Dept. I have been discussing the water situation with [PHI] since January, and she has been talking with Mike Glasgow at the plant about the black sediment in her water. (HUGE KUDOs to MIKE!!) He did test it to find that the iron levels were greater than his test would go; GT 3.3. But, because the iron levels were so high, he suggested testing for lead and copper. WOW!!!! Did he find the LEAD! 104 ppb. She has 2 children under the age of 3... Big worries here.

So, Steve, this goes back to what you and I were talking about yesterday. That the different chemistry water is leaching out contaminants from the insides of the biofilms inside the pipes. I think Lead is a good indication that other contaminants are also present in the tap water, that obviously were not present in the compliance samples taken at the plant. VOC/SOC and inorganics/metals would be good samples to start with to take at the tap. And since [PHI] drinking water is showing the high lead levels, her tap water would be a good place to start, I think.

We also talked about Dr. Joan Rose from Michigan State being on the Flint Tech Advisory Committee—you also mentioned that someone from the Dept of Community Health was on the Committee. I'm thinking that Dr. Rose would want to dive further into this, since there's actual evidence that the water is leaching contaminants from the biofilms; or Dept of Community Health would want to get involved and look at this from an epidemiological perspective. (She and her family are also exhibiting the rashes when exposed to the water, and her daughter's hair is falling out in clumps.)

Maybe MSU could authorize the payment of the analyses for these samples? Or Dept of Community Health?

The citizen's name is:

**PHI**

Jennifer

From: Lea Moste [mailto:**PHI**@gmail.com]  
Sent: Thursday, February 26, 2015 9:08 AM  
To: Crooks, Jennifer  
Subject: Fwd: Re: Water testing Results

----- Forwarded message -----

From: "Michael Glasgow" <mglasgow@cityofflint.com>  
Date: Feb 26, 2015 7:55 AM  
Subject: Re: Water testing Results  
To: "**PHI**" <**PHI**@gmail.com>  
Cc:  
Lee,

Here are your Lead & Copper Results. This number is very high, 104 ppb of lead. In the last few months over 100 samples have been tested and only 2 were over the 15 ppb regulatory limit, and the highest level I have seen is 37 ppb. I will pass this info to Mr. Croft so he is aware. I will send the sample I collected from your kitchen faucet today for a complete metals test (12 different metals), to see what the level is without letting the water stagnate over night. I'm hoping that value will be much, but we will have to see. Sorry for this news, but I wanted to let you know right away.

Mike

On Tue, Feb 24, 2015 at 1:50 PM, Michael Glasgow <mglasgow@cityofflint.com> wrote:

**PHI**,

I will bring a copy of last years annual report when I stop by tomorrow. The annual report from 2014 must be delivered to residents by July 1st of this year. I imagine we may have it complete by June.

Mike

On Fri, Feb 20, 2015 at 1:00 AM, **PHI** <**PHI**@gmail.com> wrote:

Mike,

Thank you for the water reports and we already planned to see you on the 25th at 10:00am. I was wondering if you know who I need to talk to in the water plant to obtain the Annual Drinking Water Report from last year. According to the EPA website there is link to access but when you click on it, it cannot be accessed. Was also curious if there is an expected time frame for this years report due to the switch. If you can be of any assistance I would appreciate it.

Thank You

**PHI**



On Thu, Feb 19, 2015 at 12:47 PM, Michael Glasgow <[mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)> wrote:

**PHI**

Here is a list of test results from water sampled at your home over the last 2 weeks. I have sent in your lead and copper sample, and also a sample from the toilet tank for manganese. I should hopefully have results from this testing early next week. I'll plan on stopping over on Wednesday (the 25th) around 10 am again to give you these results & sample again.

Mike

**Prysby, Mike (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, October 16, 2015 11:47 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** FW: Urgent Request for Clarification: Letter to [PHI] and justification for invalidating her samples.

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**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, October 15, 2015 1:27 PM  
**To:** Krisztian, George (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Fwd: Urgent Request for Clarification: Letter to [PHI] and justification for invalidating her samples.

Sent from my iPhone

Begin forwarded message:

**From:** Marc Edwards <edwardsm@vt.edu>  
**Date:** October 15, 2015 at 10:44:08 AM EDT  
**To:** <WyantD@michigan.gov>, <[PHI]@gmail.com>, Andrew Leavitt <ALeavitt@senate.michigan.gov>, Melissa Mays <indigrace@gmail.com>, "Dickinson, Jordan" <Jordan.Dickinson@mail.house.gov>  
**Subject:** Urgent Request for Clarification: Letter to [PHI] and justification for invalidating her samples.

Hi Dan,

Thank you for your help (if any) with the MDEQ FOIA. I received the documents last night. I was hoping you could help me with something ASAP.

One of the things creating distrust between Flint residents and MDEQ, is a long list of miscommunications and false statements by your employees. I want you to help us understand one of those miscommunications as soon as possible.

On August 4<sup>th</sup> your employee's Wurfel, Busch and Shekter Smith met with [PHI] and [PHI] [PHI]. According to [PHI] and [PHI], in a meeting with the governor's Chief of Staff, your employee's could not explain to them, why [PHI]'s samples were invalidated (i.e., thrown out of the samples used to calculate the 90<sup>th</sup>ile lead).

For your information, on the basis of records from the City, **[PHI]'s home is the ONLY home in the 2015 sampling pool that is proven to have a lead pipe.** I have compared the sample sites that the city used to the database that Flint has put together, **and of 11 samples in the database that the city claims had a lead pipe, ZERO actually had a lead pipe.** Michigan and Federal law further states that if a sample is taken from a home with a lead pipe, **even if it has a point of use device like a filter or softener**, once that sample is collected it cannot be invalidated (see below). EPA R5 staff explicitly told your employee's in writing, that [PHI]'s samples had to

be counted for compliance purposes. **Your employee's nonetheless, over R5's written instructions and the law, threw out the only Flint LCR samples known to be legitimate in the 2015 sampling round.** They also double counted [PHI]'s samples for LCR compliance purposes, even though her house does not have a lead pipe, and has no lead plumbing. So I hope you can see the "adding insult to injury" dimension of your employee's actions. The irony - using samples from the chief critics of MDEQ, to cheat on the LCR monitoring. Specifically, counting a lead free site twice (when it should not be counted at all), and throwing out three samples from the only home known to have lead pipe. We also now have data that shows every single sample we could check in the 2015 round, did not have a lead pipe at all.

Furthermore, according to [PHI] and [PHI], the Governors chief of staff ordered your employee's, to as soon as possible, communicate to [PHI] why her samples were invalidated. According to [PHI] and [PHI] the governor's chief of staff further ordered your employees to "CC" him on that communication. The governor's chief of staff also apparently asked them to get [PHI]'s address and phone number, so that they could be sure their communication got to her, and they refused, and insisted they had all of [PHI]'s information.

In the FOIA production, I was surprised to see that there is an e-mail to [PHI] dated August 25<sup>th</sup>. This is surprising because [PHI] never received that e-mail. Moreover, there is an apology to [PHI] that the e-mail is late, and furthermore, the chief of staff is not cc'd. [PHI] [PHI] has looked in her spam and other files, and there is no evidence that this late e-mail ever reached her.

I am hoping you can get to the bottom of this, and see first of all 1) why the chief of staff was not cc'd as requested, 2) if this e-mail was actually sent, and produce some evidence that it was, and 3) try to understand why your employee's illegally invalidated [PHI]'s samples over the objections of EPA and [PHI]. And I am hoping you can do this today. My understanding is that you are out and about trying to re-establish public trust in MDEQ, and this would be a good place to start.

Best Regards,

Marc Edwards

From your own web page.

c. Softeners and Other Point of Use (POU) and Point of Entry (POE) Devices:

**Sampling sites with faucets that have POU or POE treatment devices, such as softeners, shall not be used as Tier 1, 2, or 3 sites unless insufficient Tiered sites are available. Field staff shall encourage water supplies to sample from a kitchen or bathroom tap that is not normally connected to the softener. If a sample of softened water is analyzed, then the water supply may consider returning to the same site to collect a sample of unsoftened water. Some residents may be able to bypass the softener at the tap. Both sample results (softened and unsoftened) will be used to calculate the 90th percentile. Sample results shall not be deemed improper on the basis that the water passed through a softener.**

Prysby, Mike (DEQ)

**From:** Michael Glasgow <mglasgow@cityofflint.com>  
**Sent:** Wednesday, June 10, 2015 10:37 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** Re: Lead-Copper info  
**Attachments:** Consumer Notice of Lead Results.docx

810 870 0929 Personal Cell

Mike,

To answer your questions:

1. I'm trying to compile the list.
2. There were a couple of Apartment residences that were used in the first sampling pool. These would be tier 2 sites, the majority were Tier 1.
3. A copy of the consumer notice is attached below.
4. This was in response to a customer complaint, and it is a business. I would only use the Utility sink as a site if we are short a sample, and would be a Tier 3. This is not in our sample pool, but is served by lead service line.

On Tue, Jun 9, 2015 at 10:14 AM, Prysby, Mike (DEQ) <PRYSBYM@michigan.gov> wrote:

Mike,

I was trying to contact you regarding Lead and Copper info that we may need. I don't have your cell number...and the WTP main phone was not switching over to the option to have my incoming call forwarded to the lab. I wish to discuss the following:

1. Basically, we need a listing of Flint's PB&CU sampling pool (around 120 sites) with the Tier designation (Tier 1, Tier 2, or Tier 3) and those sites with lead services. It is possible that you may have sent us this information last summer as part of revising the lead & copper monitoring program.
2. The lead & copper reporting form for the July 2014 -- Dec 2014 monitoring period states that not all sites were Tier 1; however, the listing of all 100 locations on the subsequent pages show all locations being Tier 1. Please clarify
3. Please provide us a copy of the consumer lead notice that was mailed to each customer in your sampling pool....we only need a copy of one notice.

4. We have received 28 of the 100 samples for the Jan-June 2015 round of lead/copper monitoring. Four of the samples were above the lead action level; however the PURPOSE of monitoring for two of these was noted as "OTHER" instead of ROUTINE MONITORING. The address of these 2 locations are: 625 S. Grand Traverse (Utility Sink) and 625 S. Grand Traverse (Bathroom). Is this site part of the sampling pool or was this location sampled based on a customer complaint and/or concern?

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

--

Mike Glasgow  
Utilities Administrator  
City of Flint

~~Handwritten scribbles and markings at the top of the page.~~



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

**WG-15J**

**June 24, 2015**

**MEMORANDUM**

SUBJECT: High Lead Levels in Flint, Michigan -- Interim Report

FROM: Miguel A. Del Toral *MDT*  
Regulations Manager, Ground Water and Drinking Water Branch

TO: Thomas Poy  
Chief, Ground Water and Drinking Water Branch

The purpose of this interim report is to summarize the available information regarding activities conducted to date in response to high lead levels in drinking water reported by a resident in the City of Flint, Michigan. The final report will be submitted once additional analyses have been completed on pipe and water samples.

Following a change in the water source, the City of Flint has experienced a number of water quality issues resulting in violations of National Primary Drinking Water Regulations (NPDWR) including acute and non-acute Coliform Maximum Contaminant Level (MCL) violations and Total Trihalomethanes (TTHM) MCL violations as follows:

Acute Coliform MCL violation in August 2014  
Monthly Coliform MCL violation in August 2014  
Monthly Coliform MCL violation in September 2014  
Average TTHM MCL violation in December 2014  
Average TTHM MCL violation in June 2015

In addition, as of April 30, 2014, when the City of Flint switched from purchasing finished water from the City of Detroit to using the Flint River as their new water source, the City of Flint is no longer providing corrosion control treatment for lead and copper.

A major concern from a public health standpoint is the absence of corrosion control treatment in the City of Flint for mitigating lead and copper levels in the drinking water. Recent drinking water sample results indicate the presence of high lead results

in the drinking water, which is to be expected in a public water system that is not providing corrosion control treatment. The lack of any mitigating treatment for lead is of serious concern for residents that live in homes with lead service lines or partial lead service lines, which are common throughout the City of Flint.

In addition, following the switch to using the Flint River, the City of Flint began adding ferric chloride, a coagulant used to improve the removal of organic matter, as part of the strategy to reduce the TTHM levels. Studies have shown that an increase in the chloride-to-sulfate mass ratio in the water can adversely affect lead levels by increasing the galvanic corrosion of lead in the plumbing network.

Prior to April 30, 2014, the City of Flint purchased finished water from the City of Detroit which contained orthophosphate, a treatment chemical used to control lead and copper levels in the drinking water. When the City of Flint switched to the Flint River as their water source on April 30, 2014, the orthophosphate treatment for lead and copper control was not continued. In effect, the City of Flint stopped providing treatment used to mitigate lead and copper levels in the water. In accordance with the Lead and Copper Rule (LCR), all large systems (serving greater than 50,000 persons) are required to install and maintain corrosion control treatment for lead and copper. In the absence of any corrosion control treatment, lead levels in drinking water can be expected to increase.

The lack of mitigating treatment is especially concerning as the high lead levels will likely not be reflected in the City of Flint's compliance samples due to the sampling procedures used by the City of Flint for collecting compliance samples. The instructions from the City of Flint to residents direct the residents to 'pre-flush' the taps prior to collecting the compliance samples. A copy of the instructions provided by the City of Flint to residents will be included in the final report.

The practice of pre-flushing before collecting compliance samples has been shown to result in the minimization of lead capture and significant underestimation of lead levels in the drinking water. Although this practice is not specifically prohibited by the LCR, it negates the intent of the rule to collect compliance samples under 'worst-case' conditions, which is necessary for statistical validity given the small number of samples collected for lead and copper under the LCR. This is a serious concern as the compliance sampling results which are reported by the City of Flint to residents could provide a false sense of security to the residents of Flint regarding lead levels in the water and may result in residents not taking necessary precautions to protect their families from lead in the drinking water. Our concern regarding the inclusion of 'pre-flushing' in sampling instructions used by public water systems in Michigan has been raised with the Michigan Department of Environmental Quality (MDEQ). The MDEQ has indicated that this practice is not prohibited by the LCR and continues to retain the 'pre-flushing' recommendation in their lead compliance sampling guidance to public water systems in Michigan. A copy of the MDEQ guidance will be included in the final report.

In the case of the Flint resident that contacted U.S. EPA (Ms. [PHI]), the initial results from drinking water samples collected by the City of Flint in her home



for lead were 104 ug/L and 397 ug/L. The level of iron in the water also exceeded the capability of the measurement ( $>3.3$  mg/L). The lead results were especially alarming given that the samples were collected using the sampling procedures described above, which minimize the capture of lead. When contacted by U.S. EPA Region 5, the MDEQ indicated that the lead was coming from the [PHI] plumbing. Ms. [PHI] had previously indicated that all of the plumbing in the home was plastic.

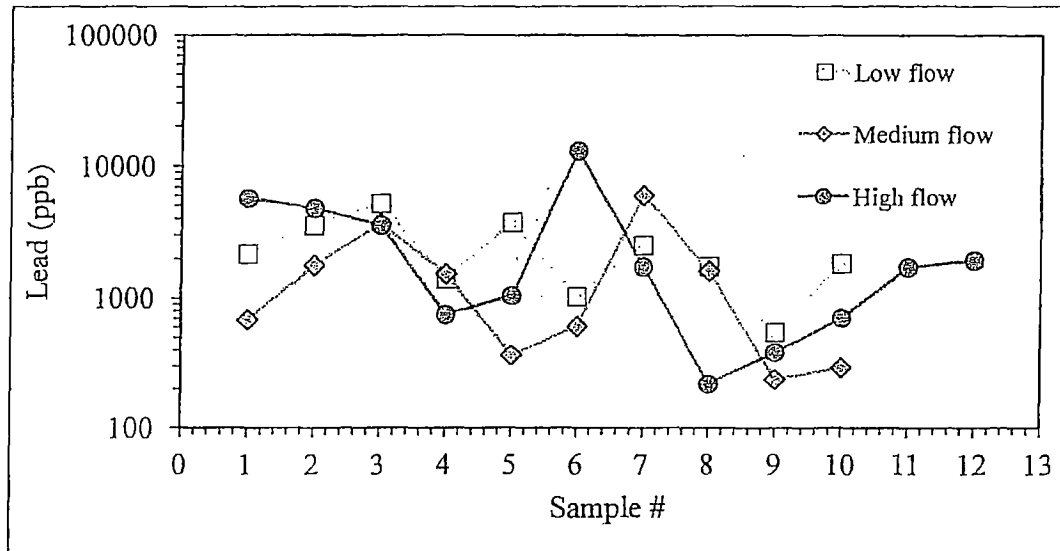
Following the confirmation of the initial high lead results, U.S. EPA Region 5 conducted two visits to the [PHI] home on April 27, 2015 and May 6, 2015. Based on an inspection of the plumbing and subsequent sampling conducted at the [PHI] residence, it was determined that except for a few minor metallic connectors, all interior plumbing, including the pipes, valves and connectors are made of plastic certified by the National Sanitation Foundation (NSF) for use in drinking water applications. Subsequent sampling showed that the faucets in the home appear to be compliant with the new lead-free requirements and are also not the source for the high lead levels. Our inspection of the interior plumbing and analysis of follow-up sampling results demonstrate that the home plumbing network is not the source of the high lead levels found at the [PHI] residence. The photographs and all sampling results will be included in the final report.

Based on the U.S. EPA inspection and documentation of the plastic plumbing at the [PHI] residence, it was suspected that the high lead was being introduced into the [PHI] home plumbing from outside the home, likely from a lead service line. Three portions of the service line were extracted during a subsequent trip on May 6, 2015 and sent for analysis, when the [PHI] service line was replaced. Analyses performed to date indicate that a portion of the service line is made of galvanized iron pipe. Inspection of the remaining portion from the water main to the external shut-off valve confirmed that the portion from the water main to the external shut-off valve is a lead service line.

Ms. [PHI] has also provided U.S. EPA with medical reports on her child's blood lead testing indicating that the child had a low blood lead level (2 ug/dL) prior to the source water switch and an elevated blood lead level following the switch (6.5 ug/dL). Redacted copies of these reports will also be included in the final report.

Subsequent to the discovery of high lead levels in the [PHI] drinking water, the water to the [PHI] home was shut off on April 3, 2015. The water was briefly turned back on to collect additional samples on April 28, 2015. Since the water had stagnated for an extended period of time, the kitchen tap was flushed for 25 minutes the night before collecting the samples. Three sets of samples were collected at different flow rates (10 at low flow, 10 at medium flow and 10 at high flow).

The drinking water samples collected from the **PHI** residence on April 28, 2015 contained extremely high lead levels, ranging in value from 200 ug/L to 13,200 ug/L (see below).



*Sample results and graph are provided courtesy of Virginia Tech*

Additional sample results from resident-requested samples have also shown lead levels in excess of the lead action level. As with the samples collected by the City of Flint for compliance, the resident-requested samples are also being collected using the 'pre-flushing', so the lead levels captured in these samples likely do not represent the worst-case lead levels in the water and the actual lead levels at these homes may be much higher.

Pending completion of the final report, my interim recommendations are as follows:

1. The U.S. EPA should follow up with the MDEQ and the City of Flint on the recommendation made by U.S. EPA to MDEQ on June 10, 2015 to offer the City of Flint technical assistance on managing the different water quality issues in Flint, including lead in the drinking water. Although there have been two written assessments regarding water quality and operational issues in Flint at the time of this report, they do not address lead in drinking water. The first is an Operational Evaluation Report (OER) produced in November 2014 by Lockwood, Andrews and Newnam, Inc. to assess the factors contributing to high Total Trihalomethane (TTHM) levels in Flint following the source change. The focus of this report is to identify potential causes and remedial actions for lowering TTHM levels. The second report (Water Quality Report) produced by Veolia for the City of Flint on March 12, 2015, is an assessment of Flint's water quality and operations which provides advice to the City of Flint primarily focused on TTHM control and other operational issues. Both reports were written prior to the recent discovery of high lead results in Flint drinking water. As such, the reports do not take into account the potential effects on lead levels in drinking water.

As previously mentioned, the City of Flint currently has no mitigating treatment for lead and is also planning another source water change in the near future. U.S. EPA's Office of Research and Development in Cincinnati has extensive experience in corrosion and corrosion control treatment and distribution system issues and would be a valuable addition to the drinking water advisory group for the City of Flint. Copies of the qualifications and experience for Michael Schock and Darren Lytle have been forwarded to MDEQ.

2. U.S. EPA should review the compliance status of the City of Flint with respect to whether the system is in violation of the LCR requirement to install and maintain optimal corrosion control and whether the MDEQ is properly implementing the LCR provisions regarding optimal corrosion control treatment requirements for large systems. Pursuant to 40 CFR Section 141.82(i), the EPA Regional Administrator may review treatment determinations made by a State and issue federal treatment determinations consistent with the requirements of the LCR where the Regional Administrator finds: (1) A state has failed to issue a treatment determination by the applicable deadlines; (2) A State has abused its discretion in a substantial number of cases or in cases affecting a substantial population; or (3) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.
3. The U.S. EPA should review whether relevant resident-requested samples are being included by the City of Flint in calculating the 90<sup>th</sup> percentile compliance value for lead. Recent drinking water tests conducted at homes in Flint for lead that are not part of the compliance sampling pool have revealed high lead levels in the drinking water. The U.S. EPA memorandum signed on December 23, 2004 provides clarification on compliance determinations and states that customer-requested samples are to be included in the 90<sup>th</sup> percentile lead compliance calculation where the sampling is conducted during the monitoring period from sites and sampling procedures meeting the LCR criteria. Given the prevalence of lead service lines in the City of Flint, should these sample results be from homes with lead service lines, the sample results would be considered compliance samples under the LCR.

Also attached is a timeline of events for Flint, Michigan. Should you have any questions regarding the information or recommendations provided, please let me know.

cc: Liane Shekter-Smith (MDEQ)  
Pat Cook (MDEQ)  
Stephen Busch (MDEQ)  
Michael Prysby (MDEQ)  
Marc Edwards (Virginia Tech)  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD

**Shekter Smith, Liane (DEQ)**

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**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, October 15, 2015 1:27 PM  
**To:** Krisztian, George (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Fwd: Urgent Request for Clarification: Letter to [PHI] and justification for invalidating her samples.

Sent from my iPhone

Begin forwarded message:

**From:** Marc Edwards <edwardsm@vt.edu>  
**Date:** October 15, 2015 at 10:44:08 AM EDT  
**To:** <WyantD@michigan.gov>, <[PHI]@gmail.com>, Andrew Leavitt <ALEavitt@senate.michigan.gov>, [PHI] <[PHI]@gmail.com>, "Dickinson, Jordan" <jordan.dickinson@mail.house.gov>  
**Subject:** Urgent Request for Clarification: Letter to [PHI] and justification for invalidating her samples.

Hi Dan,

Thank you for your help (if any) with the MDEQ FOIA. I received the documents last night. I was hoping you could help me with something ASAP.

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On August 4<sup>th</sup> your employee's Wurfel, Busch and Shekter Smith met with [PHI] [PHI]. According to [PHI] in a meeting with the governor's Chief of Staff, your employee's could not explain to them, why [PHI] samples were invalidated (i.e., thrown out of the samples used to calculate the 90<sup>th</sup>ile lead).

For your information, on the basis of records from the City, [PHI] is home is the ONLY home in the 2015 sampling pool that is proven to have a lead pipe. I have compared the sample sites that the city used to the database that Flint has put together, and of 11 samples in the database that the city claims had a lead pipe, ZERO actually had a lead pipe. Michigan and Federal law further states that if a sample is taken from a home with a lead pipe, even if it has a point of use device like a filter or softener, once that sample is collected it cannot be invalidated (see below). EPA R5 staff explicitly told your employee's in writing, that [PHI]'s samples had to be counted for compliance purposes. **Your employee's nonetheless, over R5's written instructions and the law, threw out the only Flint LCR samples known to be legitimate in the 2015 sampling round.** They also double counted [PHI]'s samples for LCR compliance purposes, even though her house does not have a lead pipe, and has no lead plumbing. So I hope you can see the "adding insult to injury" dimension of your employee's actions. The irony-- using samples from the chief critics of MDEQ, to cheat on the LCR monitoring. Specifically, counting a lead free site twice (when it should not be counted at all), and throwing out three samples from the only home known to have lead pipe. We also now have data that shows every single sample we could check in the 2015 round, did not have a lead pipe at all.

Furthermore, according to [PHI] the Governor's chief of staff ordered your employee's, to as soon as possible, communicate to [PHI] why her samples were invalidated. According to [PHI] the governor's chief of staff further ordered your employees to "CC" him on that communication. The governor's chief of staff also apparently asked them to get [PHI] address and phone number, so that they could be sure their communication got to her, and they refused, and insisted they had all of [PHI]'s information.

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Best Regards,

Marc Edwards

From your own web page.

c. Softeners and Other Point of Use (POU) and Point of Entry (POE) Devices:

Sampling sites with faucets that have POU or POE treatment devices, such as softeners, shall not be used as Tier 1, 2, or 3 sites unless insufficient Tiered sites are available. Field staff shall encourage water supplies to sample from a kitchen or bathroom tap that is not normally connected to the softener. If a sample of softened water is analyzed, then the water supply may consider returning to the same site to collect a sample of unsoftened water. Some residents may be able to bypass the softener at the tap. Both sample results (softened and unsoftened) will be used to calculate the 90th percentile. Sample results shall not be deemed improper on the basis that the water passed through a softener.

## Rosenthal, Adam (DEQ)

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Friday, August 15, 2014 5:48 PM  
**To:** 'bwright@cityofflint.com'; Mike Glasgow; 'djohnson@cityofflint.com'  
**Cc:** Busch, Stephen (DEQ); Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Prysby, Mike (DEQ); Joseph, Mark (DEQ); Skinker, Bethel (DEQ); Cook, Pat (DEQ)  
**Subject:** Flint - 02310 Fecal Positive / Boil order  
**Attachments:** PN Tier 1 - Fecal or E-coli Dist Sys.doc

### Summary:

8/12/14 – 3 routine samples test positive for total coliform (TC), Cedar Reservoir, Site 4 & Site 5.

Free Chlorine was 0 and Total Cl around 0.1 ppm.

8/13/14 – 9 repeat samples collected, 7 TC positive & 1 fecal positive downstream of Site 4

Site 4 is a Taco Bell, downstream site is a repair shop with a questionable tap.

8/14/14 – 2<sup>nd</sup> set of 9 repeat samples collected, 8 repeats Non Detect and Site 4 TC positive (downstream site with the fecal positive was cleaned and is now non detect.) Chlorine has been increased and detected at 0.2 – 0.5 ppm Free Cl.

With the confirmed fecal positive, the MCL has been elevated to require a Tier 1 Public Notice to be issued within 24 hrs of notification. The DEQ is issuing a Boil Water Order to the affected area (Public Notice attached). A 2<sup>nd</sup> Tier 2 MCL PN may be necessary once the August monitoring period is complete and the situation is resolved.

The City of Flint has been instructed to issue the Tier 1 PN according to their Emergency Response Plan, flush the system, and collect 2 sets of 5 samples 24 hrs apart in the affected area before lifting the boil order.

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

## DRINKING WATER WARNING

### The City of Flint water is contaminated with fecal coliform BOIL YOUR WATER BEFORE USING

Fecal coliform bacteria were found in the water supply on August 14, 2014. These bacteria can make you sick, and are a particular concern for people with weakened immune systems.

#### What should I do? What does this mean?

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and preparing food. Boiling kills bacteria and other organisms in the water. Continue using boiled or bottled water until further notice. This boil notice is limited to (affected area).

*Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.*

The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

#### What happened? What is being done?

3 routine samples tested total coliform positive, repeat samples were also total coliform positive as well as 1 fecal coliform positive. We are increasing our chlorine levels and flushing the system. We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within a few days.

For more information, please contact Mr. Brent Wright of the City of Flint at 810-787-6537, [bwright@cityofflint.com](mailto:bwright@cityofflint.com), 4500 North Dort Highway, Flint MI 48505. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by the City of Flint.

CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

Signature

Title

Date Distributed

Reminder to water supplier: This notice / certification must be sent to the DNRE.

**Prysky, Mike (DEQ)**

---

**From:** BadAddress  
**Sent:** Monday, August 18, 2014 10:59 AM  
**To:** deq-assist  
**Subject:** Email Inquiry

---

**CompanyName:**

**FirstName:** Raney

**LastName:** Russell

**Email:**

**DayPhone:**

**AltPhone:**

**Address:** 2405 E. Court Street

**City:** Flint

**State:** MI

**ZipCode:** 48503

**County:** Genesee

**YourMessage:** I have it on good authority that the Flint City Council members are trying to cover-up a larger drinking water contamination, than that which was originally reported. On August 12, 2014 the new Flint Water Treatment Plant discharged a large amount of sewage into the Flint River (the same river where it gets its water). On August 16, 2014 the Flint Journal reported that a small area of the city's water was contaminated and that there is a boil advisory until further notice. The water in that area was found to have E. Coli. However, several people from areas in Flint, which are not under the boil water advisory, are getting sick. Three neighbors in the College/Cultural area in Flint, MI, 48503 are violently ill, reporting flu like symptoms. A dog has died and 2 dogs are ill in the area of Simcoe Ave, Flint, MI 48507, from consuming tap water. This issue is wider than the city is reporting and it needs to be investigated immediately.



**Prysby, Mike (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, September 30, 2015 3:07 PM  
**To:** Busch, Stephen (DEQ); Rennaker, Joanne (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ); Skinker, Bethel (DEQ); Joseph, Mark (DEQ); Swendsen, Kurt (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ); Philip, Kris (DEQ); Cook, Pat (DEQ); Howd, Pamela (DEQ)  
**Subject:** RE: Flint calls

ODWMA is receiving a lot of calls with questions from Flint residents concerned about the safety of their drinking water. If you receive one of these calls, our message should be consistent – the drinking water distributed to city customers currently meets all drinking water standards and is considered safe. However, there is no safe level for lead. The fact that Flint meets the drinking water standard is based on an evaluation of the effectiveness of their treatment system to minimize lead leaching from plumbing materials. Compliance does not mean that under certain conditions that some homeowners may still have water in their domestic plumbing that has leached some lead from lead pipes or lead solder.

The only way for a resident to know if they may be exposed to lead leaching from their plumbing system is having a sample from that residence analyzed for lead at a certified laboratory. The DEQ laboratory is not providing that service at no cost. The city of Flint currently is accommodating requests from residents without charging them, but the residents have to go through the city to arrange that sampling, and the city may have a backlog right now.

If the caller has a result that indicates lead is present, or in the absence of a result, our advice should be to minimize any stagnation of the water before consumption, even without knowing if they have plumbing that contains lead. You could tell them they can do so by letting a faucet run for a few minutes or until the water is cooler (don't set a time – it can be so variable) and then use it for drinking or cooking.

Please be polite and empathetic if you receive one of these calls.

I also want to thank you for the effort you have made to respond to this issue. It is noticed and appreciated. In recognition of your performance, I have arranged for you to receive a 2 percent merit increase starting tomorrow.

Richard

Richard Benzie, P.E., Chief  
Field Operations Section  
Office of Drinking Water and Municipal Assistance, MDEQ  
517-284-6512

**Prysby, Mike (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, September 09, 2014 10:19 AM  
**To:** Crooks, Jennifer; Prysby, Mike (DEQ)  
**Cc:** Poy, Thomas; Benzie, Richard (DEQ)  
**Subject:** RE: Citizen complaint call from man who lives in Flint, MI

Jennifer,

The City has found two transmission valves that were closed (36 inch and 24 inch) which transport water to that section of the system. This likely contributed to more stagnant water conditions and lower chlorine residuals in that area. The 36 inch valve has been opened but the 24 inch is inoperable and will need to be repaired or replaced.

Given these valve issues, I have inquired whether low pressure conditions less than 35 psi, would be present in this portion of the system? If low pressure conditions exist, a cross connection or siphon condition where leaks or breaks are present may be occurring. While longer transmission times may contribute to lower chlorine residual, the presence of coliform bacteria suggests contaminants have entered the system and their regrowth and resurgence could be assisted by the presence of a biofilm or tuberculation on the pipe walls.

They are continuing to investigate to identify and address any such issues.

All 6 samples collected Saturday came back ND on Sunday, but we had 1 of 6 sites come back TC positive yesterday (collected Sunday) and they collected the normal full distribution set (10+1 samples) Monday which we expect results early this afternoon. If all results are ND today the BWA could be lifted.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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**From:** Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]  
**Sent:** Tuesday, September 09, 2014 10:00 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Poy, Thomas; Benzie, Richard (DEQ)  
**Subject:** Citizen complaint call from man who lives in Flint, MI

Hi, Steve and Mike. We heard about the boil water advisory for Flint for 9/3 last week. Tom Poy also had several calls from Lathan Jefferson yesterday, re-iterating his past calls/claims that the Flint water is unfit to drink.

Any update as to the source of positive bacti? I heard no E.coli, which is good.

Thank you for your time

---

**From:** Murphy, Thomas  
**Sent:** Monday, September 08, 2014 1:48 PM  
**To:** Poy, Thomas  
**Cc:** Shoven, Heather; Crooks, Jennifer  
**Subject:** Citizen complaint call from man who lives in Flint, MI

I checked Flint's website and found the attached 9/3/2014 Boil Water Notice (affected area expanded on 9/5/2014) for an apparent monthly total coliform bacteria MCL violation.



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

December 12, 2014

Mr. Brent Wright, Operation Supervisor  
City Of Flint - DPW  
Flint Water Plant  
4500 North Dort Highway  
Flint, MI 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice – Maximum Contaminant Level for Total Trihalomethanes  
Operational Evaluation – Total Trihalomethanes  
4<sup>th</sup> Quarter 2014 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the City of Flint is in violation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels (MCL) for disinfection byproducts*, of the 1979 Administrative Code.

In accordance with R.325.10610, *MCLs for disinfection byproducts*, of the 1979 Administrative Code, the MCL for disinfection byproduct total trihalomethanes (TTHM) is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City of Flint's highest TTHM locational running annual average (LRAA), based on the last three quarters, ending November 30, 2014, is 0.099 mg/l which exceeds the standard, and that two of the eight sample site locations exceed the standard of 0.080 mg/L.

Further, in accordance with R325.10719I, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, when an operational evaluation level (OEL) at a monitoring location for TTHM exceeds 0.080 mg/L, a supply shall conduct an operational evaluation and submit a written report of the evaluation to the department not later than 90 days after being notified of the analytical result that causes the supply to exceed the operational evaluation level. As listed in the table below, our records show that TTHM operational evaluation levels for the City of Flint exceed 0.080 mg/L at four of the City's eight sample site locations.

TTHM Results (mg/L)					
	5/21/14	8/21/14	11/20/14	LRAA	OEL
DBP1 McDonalds 3719 Davison	<b>0.162</b>	<b>0.145</b>	0.059	<b>0.092</b>	<b>0.106</b>
DBP2 Liquor Palace 3302 S. Dort Highway	<b>0.112</b>	<b>0.127</b>	0.033	0.068	0.076
DBP3 North Flint Auto 6204 N. Saginaw St.	<b>0.097</b>	<b>0.118</b>	0.041	0.064	0.074
DBP4 University Market 2501 Flushing Road	<b>0.106</b>	<b>0.196</b>	<b>0.094</b>	<b>0.099</b>	<b>0.122</b>
DBP5 Taco Bell 3606 Corunna Road	0.079	<b>0.181</b>	0.034	0.074	<b>0.082</b>
DBP6 Rite-Aid Pharmacy 5018 Clio Road	<b>0.088</b>	<b>0.144</b>	0.054	0.072	<b>0.085</b>
DBP7 Salem Housing 3216 MLK Boulevard	<b>0.082</b>	<b>0.112</b>	0.050	0.061	0.074
DBP8 BP Gas Station 822 S. Dort Highway	0.075	<b>0.112</b>	0.036	0.056	0.065

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on December 1, 2014, and will continue until TTHM LRAA is below the MCL at all sample sites.

We acknowledge and appreciate the city's cooperation with our recommendation to preemptively conduct an Operational Evaluation following the City's second quarterly round of monitoring in August. That Operational Evaluation report has identified possible causes and corrective measures for the elevated TTHM levels which we encourage the City continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported in the most recent quarter, and suggest the City may be able to achieve compliance with the TTHM standard.

Our office is continuing to review the Operational Evaluation report that was submitted on December 1, 2014, and will provide the City and their consultant comments as needed to help address this MCL violation.

Water systems that exceed the OEL must complete and submit an Operational Evaluation in accordance with Administrative Rule 719I (R325.10719I) within 90 days of being notified of the violation. **An updated Operational Evaluation report, which incorporates the most recent sample results, must now be completed and received by our office by no later than March 1, 2015.**

If you have any other factual information you would like us to consider regarding the violation identified in this Violation Notice (VN), please provide them in a written response by January 12, 2015.

Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN

which contains the minimum required language. The City is encouraged to include additional information regarding its response to this violation. **Please notify your consumers by January 10, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the public notice.** This violation must also be included in your 2014 Consumer Confidence Report (CCR), due by July 1, 2015. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below.

Sincerely,

\_\_\_\_\_  
Michael F. Prysby, P.E., District Engineer  
Lansing District Office  
Office of Drinking Water & Municipal  
Assistance  
517-290-8817

\_\_\_\_\_  
Adam Rosenthal, EQA  
Lansing District Office  
Office of Drinking Water & Municipal  
Assistance  
517-284-6644

mfp/ar/jlr  
Enclosure

cc: Mr. Darnell Early, Emergency Manager, City of Flint  
Mr. Daughtry Johnson, City of Flint  
Mr. Howard Croft, City of Flint  
Mr. Robert Bincsik, City of Flint  
Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5  
Genesee County Health Department  
Ms. Liane Shekter Smith, P.E., DEQ  
Mr. Richard Benzie, P.E., DEQ  
Mr. Stephen Busch, P.E., DEQ

# IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

## City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, and November 20 of 2014). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the Maximum Contaminant Level (MCL). The standard for TTHMs is 80 µg/L. The location reporting the highest TTHM level was 99 ug/L; thus, our water system exceeds the TTHM MCL.

### What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

### What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

*People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.*

### What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem by 2015.

For more information, please contact Mr. Brent Wright at 517-787-6537 or the Flint Water Plant at 4500 North Dort Highway, Flint, MI 48505.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by the City of Flint.

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### CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

---

Signature

Title

Date Distributed

Reminder to water supplier: This notice / certification must be sent to the DEQ.

**Prysby, Mike (DEQ)**

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**From:** Michael Glasgow <mglasgow@cityofflint.com>  
**Sent:** Tuesday, September 09, 2014 9:47 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright; Daugherty Johnson; Howard Croft  
**Subject:** September 2014 Boil Water Notice Timeline  
**Attachments:** Boil Water Advisory Event Timeline # 2.docx

Gentlemen,

Attached is a timeline of events that led us to the recent boil water notice. It shows all sampling and results from 9/2 thru today.

FYI:

I was just talking with a couple of employee's from the Water Service Center who have been helping us with our investigation of the the distribution system. It seems that they have found one of the possible causes of our recent issues. A 36" transmission main not far west of the treatment plant had a valve that was closed, and the 24' transmission main that leads west also has a valve that is closed. The 36" valve was opened, however the valve on the 24" is inoperable. With these valves closed, it appears the water leaving the plant has no direct route to the west side of the city (or the West Side Reservoir)

Mike Glasgow  
City of Flint Water Plant



**Prysby, Mike (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, September 09, 2014 10:00 AM  
**To:** Michael Glasgow; Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright; Daugherty Johnson; Howard Croft  
**Subject:** RE: September 2014 Boil Water Notice Timeline

Mike,

Thanks for the information.

Given these valve issues, would low pressure conditions less than 35 psi, be present in this portion of the system? If low pressure conditions exist, a cross connection or siphon condition where leaks or breaks are present may be occurring. While longer transmission times may contribute to lower chlorine residual, the presence of coliform bacteria suggests contaminants have entered the system and their regrowth and resurgence could be assisted by the presence of a biofilm, tuberculation on the pipe walls, and/or phosphate coating.

Please continue with your investigation and let us know how the valve repair/replacement goes.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** Michael Glasgow [mailto:mglasgow@cityofflint.com]  
**Sent:** Tuesday, September 09, 2014 9:47 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright; Daugherty Johnson; Howard Croft  
**Subject:** September 2014 Boil Water Notice Timeline

Gentlemen,

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Mike Glasgow  
City of Flint Water Plant

**Rosenthal, Adam (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Friday, July 10, 2015 11:28 AM  
**To:** 'Michael Glasgow'  
**Cc:** Brent Wright  
**Subject:** RE: lead/copper

we are discussing options regarding this and future rounds of monitoring and will get back with you.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Thursday, July 09, 2015 2:19 PM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright  
**Subject:** Re: lead/copper

Adam,

I just sent the last of the samples to the lab today. Unfortunately we did not reach 100 samples. I believe the count I have is 76 total. Since we have had a few more hits this round, we are going to continue to solicit samples for our own informational purposes. I am disappointed in the turnout of sampling, we distributed close to 200 sample bottles. With this monitoring violation will we be required to collect another round of 100 samples?

Also, I have attached a copy of our June bromate test results.

On Thu, Jul 9, 2015 at 9:55 AM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Morning Mike, do you have a count on how many lead/copper samples were turned in? I know they all haven't been run at the lab yet, but if I can verify how many there will be, that would be good. So far I have 70 results and the City is below the AL for lead – current 90<sup>th</sup> = 13 ppb. All the copper results are below.

thanks,

Adam Rosenthal, EQA

MDEQ – Office of Drinking Water and Municipal Assistance

Lansing District – Constitution Hall 1SW

PO Box 30242

Lansing, MI 48909

517-284-6644

fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:

[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

--

Mike Glasgow  
Utilities Administrator  
City of Flint  
1101 S. Saginaw St.  
Flint, MI 48502  
(810)766-7135 ext. 2602

**Prysby, Mike (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, August 20, 2014 3:28 PM  
**To:** Busch, Stephen (DEQ); Shekter-Smith, Liane (DEQ); Benzie, Richard (DEQ); Wurfel, Brad (DEQ); Feuerstein, Heather (DEQ); Willard, Veronica (DEQ); Kinney, Deana (DEQ)  
**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** Flint BWA

Ron Fonger (Flint Journal) contacted me concerning the status of the BWA in the southwest portion of the Flint water distribution system. I informed Mr. Fonger, that the MDEQ is authorizing the city to rescind the BWA based upon the absence of total or fecal coliform bacteria from any of the samples (system-wide set) collected yesterday (Aug 19<sup>th</sup>) and from the affected area on Monday Aug. 18<sup>th</sup>. Mr. Fonger asked whether the city or the MDEQ has identified a cause to the contamination. I responded that a direct cause has not been identified. The water utility inspected both reservoirs and noted a one vent screen not totally intact; however, the inside of the reservoir did not appear compromised. The screen was repaired. The water utility is continuing to investigate other potential system anomalies including unprotected cross connections, nearby water distribution system repairs and/or loss of pressure, and un-authorized connections. I concluded that the MDEQ will be providing the city, as soon as possible, a standard notice to rescind the BWA.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817



Nicky Zizea

NBC 25 NEWS

WSSN	System	Mon Prd	Collect Date	Site Cod	Address	Analyte	Result	Unit	LRAA	Units	Res
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP1	3719 DAVISON ROAD	2950	0.1624	MG/L	0.041	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP2	3302 SOUTH DORT HIGHWAY	2950	0.1116	MG/L	0.028	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP3	6204 NORTH SAGINAW STREET	2950	0.0965	MG/L	0.024	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP4	2501 FLUSHING ROAD	2950	0.1064	MG/L	0.027	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP5	3606 CORUNNA RD	2950	0.0792	MG/L	0.02	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP6	5018 CLIO RD	2950	0.0882	MG/L	0.022	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP7	3216 MLK BLVD	2950	0.0822	MG/L	0.021	MG/L	1
02310	FLINT, CITY OF	2Q2014	5/21/2014	DBP8	822 S DORT HWY	2950	0.0751	MG/L	0.019	MG/L	1
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP1	3719 DAVISON ROAD	2950	0.1453	MG/L	0.077	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP2	3302 SOUTH DORT HIGHWAY	2950	0.1272	MG/L	0.06	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP3	6204 NORTH SAGINAW STREET	2950	0.1183	MG/L	0.054	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP4	2501 FLUSHING ROAD	2950	0.1962	MG/L	0.076	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP5	3606 CORUNNA RD	2950	0.1813	MG/L	0.065	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP6	5018 CLIO RD	2950	0.1444	MG/L	0.058	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP7	3216 MLK BLVD	2950	0.1124	MG/L	0.049	MG/L	2
02310	FLINT, CITY OF	3Q2014	8/21/2014	DBP8	822 S DORT HWY	2950	0.112	MG/L	0.047	MG/L	2
02310	FLINT, CITY OF	4Q2014	11/19/2014	DBP3	6204 NORTH SAGINAW STREET	2950	0.0411	MG/L	0.064	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/19/2014	DBP4	2501 FLUSHING ROAD	2950	0.0936	MG/L	0.099	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/19/2014	DBP6	5018 CLIO RD	2950	0.0536	MG/L	0.072	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/19/2014	DBP7	3216 MLK BLVD	2950	0.0501	MG/L	0.061	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/20/2014	DBP1	3719 DAVISON ROAD	2950	0.0586	MG/L	0.092	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/20/2014	DBP2	3302 SOUTH DORT HIGHWAY	2950	0.0333	MG/L	0.068	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/20/2014	DBP5	3606 CORUNNA RD	2950	0.0339	MG/L	0.074	MG/L	3
02310	FLINT, CITY OF	4Q2014	11/20/2014	DBP8	822 S DORT HWY	2950	0.0362	MG/L	0.056	MG/L	3



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

April 3, 2015

Mr. Brent Wright  
City of Flint Water Plant  
4500 North Dort Highway  
Flint, Michigan 48505

Dear Mr. Wright

SUBJECT: Long Term 2 Enhanced Surface Water Treatment Rule (LT2 Rule)  
2<sup>nd</sup> Round of Source Water Monitoring Requirements

The LT2 Rule was promulgated by the United States Environmental Protection Agency on January 5, 2006. The Department of Environmental Quality (DEQ) adopted this rule into the Administrative Rules in December, 2009. All public water systems that are supplied by a surface water source, and systems supplied by a ground water source under the direct influence of surface water (GWUDI), are subject to this rule.

According to the LT2 Rule, systems are required to conduct an initial and a second round of source water monitoring for each plant that treats a surface water or GWUDI source. Please keep in mind that grandfathering data will not be accepted for the second round of monitoring. This monitoring includes at least one source water *Cryptosporidium*, *E. coli*, and turbidity sample per month for a period of 24 months for systems serving populations greater than 10,000 people. Systems will be assigned to a "treatment bin" based on the results of source water monitoring. The treatment bin specifies the level of *Cryptosporidium* removal and/or inactivation that the system must achieve.

Our records indicate that your system is required to comply with the source water monitoring requirements on Schedule 2 as stated below in Table 1. Therefore, your system is required to submit to the DEQ, a source water monitoring plan for each plant by July 1, 2015, and start the 2<sup>nd</sup> round of monitoring in October, 2015.

Table 1 – LT2 Milestone Dates for 2nd Round of Source Water Sampling

System Population	Schedule	Must submit Source Water Sampling Plan by...	Must begin second round of source water monitoring...
At least 100,000	1	January 1, 2015	April 1, 2015
50,000 – 99,999	2	July 1, 2015	October 1, 2015
10,000 – 49,999	3	July 1, 2016	October 1, 2016
<10,000	4	July 1, 2017	October 1, 2017

Mr. Brent Wright

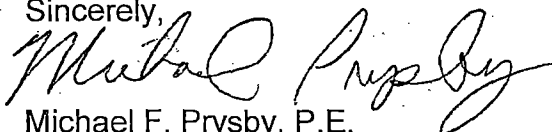
2

April 3, 2015

Enclosed with this letter is a Source Water Sampling Plan template that you can complete and submit to this office to comply with the July 1, 2015, deadline. The template includes instructions and a worksheet that will assist the DEQ in determining if your plan meets the requirements of the LT2 Rule.

If you have any questions about this subject, feel free to contact me at 517-290-8817; prysbym@michigan.gov; or Department of Environmental Quality, Office of Drinking Water and Municipal Assistance, Lansing District Office, 525 West Allegan Street, 1st Floor South, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,



Michael F. Prysby, P.E.  
District Engineer  
Field Operations Section  
Office of Drinking Water and  
Municipal Assistance

Enclosures

cc: Mr. Howard Kroft, City of Flint



**Prysby, Mike (DEQ)**

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**From:** Lytle, Darren <Lytle.Darren@epa.gov>  
**Sent:** Monday, October 19, 2015 12:05 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP PH2 SEG4 - Corrosion Control

*Clarify dosage as PO4 as indicated or PO4 as*

Mike,

Thank-you for giving us the opportunity to review the city of Flint's corrosion control plan.

We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO<sub>4</sub>/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO<sub>4</sub>/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO<sub>4</sub>/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO<sub>4</sub>/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO<sub>4</sub>. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Lastly, we see no mention of a water quality monitoring program. Two programs need to be put in place immediately (before return to Detroit water) to 1) identify lead sources, 2) assess treatment effectiveness against lead release from all of the simultaneously operating mechanisms (solubility, particulate release, galvanic corrosion), and 3) assess orthophosphate levels and stability of water quality in the distribution system.

There are multiple sources of lead in the Flint distribution system to the consumers' taps, such as: pipes; leaded brass; leaded solder; accumulations on old galvanized steel pipes; possibly accumulated on copper or some plastic pipes. It is critical that the fate of orthophosphate in the distribution system is understood, and how effective it is against each type of lead source, so dosing adjustment can be properly made. For this purpose, we recommend that a number of residences throughout Flint that meet the following plumbing criteria, be identified for an assessment of the contribution lead from the different potential service line and interior plumbing sources, through detailed mapping of plumbing materials, lengths, sizes, and location and type of inline devices and faucets using profile sampling. For confidence in interpretation, probably at least 5 sites from each of the configurations will be necessary. The configurations we would estimate to be most important (but should be changed or added to if local construction practice indicates it's necessary): Lead service line, galvanized steel interior plumbing; lead service line, copper with leaded solder joints; lead service line, plastic interior plumbing. It is also possible that interior plumbing may differ from the material used for the customer-side service line segment. We would be glad to discuss the specifics of this sampling effort.

For the purpose of assessing stability of water quality in the distribution system and to inform on orthophosphate residual adjustment, we suggest that 8 to 10 locations in the distribution system be selected to measure pH, alkalinity, orthophosphate, turbidity and iron on a weekly basis. These could be collected from TCR sampling locations, or other readily-accessible buildings, should be located at a distribution of locations in the distribution system and should be collected after a flush sufficiently long to assure that "fresh" distribution system water is being measured. Research has shown that over time, orthophosphate can reduce disinfectant demand associated with corroding metallic distribution system materials. These measurements need to be performed in the field and can simply be done with a portable HACH test kit or spectrophotometer.

A lead sampling plan needs to be in place to access the effectiveness of water change and treatment boost. LCR monitoring sites with confirmed lead service lines can be in the sampling pool. Sampling should consist of a 1 liter first draw sample (LCR sample without 5 minute pre-flush), followed by an additional flushed sample or two depending on profile sample results which is intended to capture major lead source(s). The specific details of this effort need to be worked out by the technical committee as soon as possible. We would gladly work with Flint on establishing a water sampling program to identify and verify lead service line sites. The plan and initial sampling effort should be performed before the switch so that one baseline sample set is collected.

Lastly, our strength does not fall under full-scale pump and chemical feed delivery systems. We would only say that the systems need to be scaled-up in size to accommodate our suggested dosing needs. Also, there is some discussion about diverting water to the Dort reservoir and an associated orthophosphate feed system. We are not familiar with the reservoir but are wondering if it is an open reservoir?

Of course this is a lot of information to share and we would gladly be available to discuss the technical and scientific basis for our suggestions.

Let us know if you have any questions and thanks again,

Darren and Mike

Darren A. Lytle, Ph.D., P.E.  
Branch Chief (Acting)  
U.S. Environmental Protection Agency  
26 West Martin Luther King Dr.  
Cincinnati, Ohio 45268  
Phone: (513) 569-7432  
Fax: (513) 487-2543  
email: lytle.darren@epa.gov

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**From:** Prysby, Mike (DEQ) [mailto:PRYSBYM@michigan.gov]

**Sent:** Friday, October 16, 2015 1:32 PM

**To:** Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>  
**Cc:** Busch, Stephen (DEQ) <BUSCHS@michigan.gov>  
**Subject:** FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

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**From:** Matta, Samir [<mailto:SFMatta@lan-inc.com>]  
**Sent:** Friday, October 16, 2015 12:02 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

#### **Basis of Design**

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO<sub>4</sub> has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO<sub>4</sub>. Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO<sub>4</sub> demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO<sub>4</sub> when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

**Samir F. Matta, PE**

Team Leader



**Lockwood, Andrews  
& Newnam, Inc.**

A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532

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## Flint WTP Start-up

On April 25, 2014 the Flint Water Treatment Plant (WTP), for the first time since 1967, began distributing drinking water to city residents with treated water from the Flint River. This accomplishment was made in part by a collaborative effort between the city of Flint, their consultants, and staff from the Office of Drinking Water and Municipal Assistance (ODWMA) and the Office of Waste Management and Radiological Protection (OWMRP) programs. This included rehabilitation of the WTP necessary for full-time operation, addressing problems with the disposal of treatment plant residuals, and oversight of plant operation and compliance monitoring.

ODWMA staff worked diligently with the city and their consultants discussing water plant design parameters and treatment requirements to help assure an acceptable design. Staff was also aware of the city's concern over the expiration of their water service contract with Detroit and expedited comments/questions pertaining to the Act 399 permit submittals in a timely manner. Major rehabilitation components included upgrading treated water pumping capabilities, improving mid-treatment disinfection, upgrading electrical transformers and switchgear, and adding provisions for stand-by power generation. An Act 399 construction permit was issued on April 9, 2014 authorizing the city to proceed with the necessary improvements.

ODWMA staff also worked with staff from the OWMRP on establishing a path towards correcting un-resolved violations at the Bray Road sludge lagoon. Although, the existing sludge lagoon was the WTP's best alternative for temporary storage of lime sludge, the site historically fell victim to unauthorized disposal of solid waste (concrete debris and street sweepings) which resulted in the issuance of several violation notices from OWMRP. Separation the unauthorized disposal area from the sludge lagoon area, correction of an un-authorized discharge to a local surface water stream, and construction a new decant structure with discharge to the sanitary sewer were necessary to allow the WTP to discharge lime sludge at this location. The effort put forth by staff from both programs resulted in the issuance of a separate Act 399 permit for the specific improvements at the Bray Road sludge lagoon.

Continued oversight of the WTP leading up to the April 25<sup>th</sup> start-up confirmed adequate operation and compliance with the drinking water standards.

The WTP continues to maintain compliance with the drinking water standards and operating requirements. Both WTP operators and ODWMA staff maintain frequent contact concerning WTP operation and treated water quality. Monthly operation reports that convey important treatment plant operating parameters, including the microbial integrity of the treated water, are reviewed by ODWMA to assure compliance. Additional WTP inspections have been conducted to review and discuss the monthly reports and to observe the treatment process. ODWMA also worked the WTP operators on establishing a new water quality monitoring schedule based upon the change in the source of water supply. The new schedule will assist WTP operators in maintaining compliance with the monitoring requirements established in the Michigan Safe Drinking Water Act.

Prysby, Mike (DEQ)

From: Michael Glasgow <mglasgow@cityofflint.com>  
Sent: Friday, September 05, 2014 8:55 AM  
To: Prysby, Mike (DEQ)  
Cc: Brent Wright  
Subject: Positive Total Coliform Samples

Mike,

Good morning, I am writing to follow up on my phone call regarding recent positive total coliform samples in the distribution system. Distribution site #5 sampled on 9/2/2014 (2501 Flushing rd.) was present for total coliforms. Repeat sampling at Site #5 and upstream of site #5 (1117 N. Chevrolet Ave.) on 9/3/2014 were present for total coliforms. Samples were collected again on 9/4/2014, and results will be available later this afternoon. I will contact you immediately as the results become available. Chlorine residuals were low, so yesterday were added chlorine at the West Side Reservoir. Everything has been fine with the plant. Turbidities have been right around 0.1 NTU, and the free chlorine residual leaving the plant @ the 3MG well has been around 2.0 mg/L.

		Free Cl	Total Cl	
9/2/2014	Site #5	0.0	0.1	POS
9/3/2014	Site #5	0.0	0.2	POS
	Upstream	0.1	0.3	POS
	Downstream	0.1	0.3	NO
9/4/2014	Site #5	0.1	0.2	NO
	Upstream	0.2	0.6	POS
	Downstream	0.2	0.4	POS

Rem City Results - NO → ~~except site 5~~  
find out on SAT.

9/5/13 site 5 - POS  
up -  
down -

**Prysby, Mike (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, September 05, 2014 2:47 PM  
**To:** Daugherty Johnson (djohnson@cityofflint.com); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com  
**Cc:** Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** Flint Site 5 Boil water advisory documents  
**Attachments:** Boil PN TC detected.pdf; Flint-Site5-BWA.pdf

Gentlemen,

Attached are the boil water advisory public notice with all required language and a map of the impacted zone. Please distribute to your media contacts immediately.

Once we have 2 sets of non-detect samples from the impacted area we can discuss lifting the advisory.

You indicated that flushing of the area has already started.

Please ensure the water system is taking investigative steps to identify a possible source

- Inspect storage facilities
- Verify pumping and treatment system remains intact and uncontaminated
- Inspect cross connection accounts in the affected area
- Survey the area for any unidentified cross connections
- Review any recent construction or maintenance in the area
- Check for building permits and with building inspectors for any recent construction in the area
- Check with fire departments and DPW for any temporary or improper hydrant use
- Review pumpage and check for breaks, leaks, or an uptick in unaccounted water loss
- Ensure any vacant properties have had the water service shutoff
- Review CI residual data, conduct additional CI monitoring, and increase disinfectant residual

I will be in contact with the County Health Department and the MDARD Food and Dairy Division.

You can reach me over the weekend at this number or Mike Prysby at his number.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

## **Rosenthal, Adam (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Thursday, June 25, 2015 10:48 AM  
**To:** Mike Glasgow; 'bwright@cityofflint.com'  
**Cc:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** 6/30 & 7/1/15 deadlines  
**Attachments:** Flint-2015-04-03-LT2ESWTR.pdf

Morning Mike & Brent, just wanted to remind you/confirm that Flint is on track for a few items.

1 – We hope you have 61 more lead/copper samples collected and sent to the lab by 6/30/15, and that they are will be below the AL for lead. As of now with 39 results, Flint's 90<sup>th</sup> percentile is over the AL for lead.

2 – LT2 source water monitoring plan, reminder that it is due to our office for review by 7/1/15 per Mike's 4/3/15 letter, (attached).

3 – Consumer Confidence Report, (CCR), has not been received yet – due to our office, Gen. Co. LHD & your customers by 7/1/15.

Please provide an update for the above items.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)



**Busch, Stephen (DEQ)**

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**From:** Poy, Thomas <poy.thomas@epa.gov>  
**Sent:** Monday, September 21, 2015 12:19 PM  
**To:** Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** FW: Flint MI: LCR Enforcement Issues  
**Attachments:** Flint LCR for FOIA 6429-15 (5).pdf; FOIA 15-585 Part 2 55pgs (12).pdf

Liane/Richard/Steve: Marc Edwards sent the email below to a number of EPA addressees. You probably want to forward this to Dan Wyant too.

Tom

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Tom Poy  
Chief, Ground Water and Drinking Water Branch  
USEPA - Region 5  
(312) 886-5991

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**From:** Shoven, Heather  
**Sent:** Monday, September 21, 2015 7:33 AM  
**To:** Bair, Rita; Damato, Nicholas; Poy, Thomas  
**Cc:** Deltoral, Miguel  
**Subject:** FW: Flint MI: LCR Enforcement Issues

Hi Tom, Nick, and Rita --

I will set up a meeting to discuss this email. Let me know if you would like me to include HQ. Thanks!

Best wishes,  
Heather

Heather A. Shoven | Enforcement Team Leader | U.S. Environmental Protection Agency, Region 5  
Ground Water and Drinking Water Branch | 77 W. Jackson Blvd (WG-15J) | Chicago, IL 60604 | 312-886-0153

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**From:** Marc Edwards [<mailto:edwardsm@vt.edu>]  
**Sent:** Sunday, September 20, 2015 9:30 PM  
**To:** Schock, Michael; Lytle, Darren; [kempic.jeffrey@epa.gov](mailto:kempic.jeffrey@epa.gov); Burneson, Eric; [demarco.carol@epa.gov](mailto:demarco.carol@epa.gov); Murphy, Thomas; Shoven, Heather; Deltoral, Miguel  
**Subject:** Flint MI: LCR Enforcement Issues

Mike, Darren, Jeff, Eric, Carol and Miguel and R5 MI/Enforcement personnel (as listed on the R5 webpage).

In this e-mail, I am making you aware of what we know regarding the Flint lead situation.

1) They do not have an approved lead sampling pool. Only 13 of the lowest lead sampled homes from 2014, were resampled in 2015.

The homes sampling high in 2014, were not asked to be resampled.

At best, their program is sending out sampling bottles at random across the city.

2) This message exemplifies the type of site selection, that they are doing to satisfy their high risk LCR monitoring pool site.

That is, none. They are not even hiding it.

<http://www.flintneighborhoodsunited.org/drinking-water-testing/>.

3) Furthermore, in a video now on the ACLU website, at the end of the interview, Mike Glasgow (Flint LCR program) notes what is perfectly obvious from looking at the MDEQ FOIA materials.

*"we threw out bottles everywhere just to collect as many as we can, just to hit our number, and we just turn in every result we get in."*

Moreover, they do not have the records to show the homes have lead pipe. *"we are still looking for the records"*

See video here. Start at 4 minutes and 13 seconds to see the admission. <https://vimeo.com/139882021> *lead service line?*

4) On top of that, according to my count, MDEQ covered up no fewer than 5 violations in the 2015 sample round. These include:

a) Technical violation in that what they now stamp as the "draft" report (attached) is late (the signed date is 7/28/2015). It was due 7/10/2015. The final "revised" report is dated 8/20/2015 (also attached), which is 40 days late.

b) Although 87 sites from 2014 were not resampled, no written justification for the site changes was provided in the FOIA materials, and this is required by law.

The statement given today by Flint, that residents were not resampled because they did not want to participate, is contradicted by my conversations with residents.

c) In the original 71 samples Flint submitted late, the lead 90%ile action level was exceeded. MDEQ took the initiative to invalidate 2 samples, dropping Flint below the Action Level.

Flint never requested in writing that any of the samples be invalidated (see the comments written in the box of page 1, FOIA 15-585).

Mike Glasgow says that the 2 high samples were deleted based on the conference call. Only the high samples were scrutinized for meeting the sample pool criteria.

No low samples were investigated. I have the e-mails.

4) The "Draft 7/28/2015" and "revised 8/20/2015" LCR reports, on page 1, check boxes that note Tier 1 sites are not used. MDEQ asks no questions about that. In video Mike admits he has no knowledge of what sites actually have lead pipe or not.

5) Flint did not achieve the minimum number of samples as determined before the sampling round. In his e-mail Mike Glasgow (see below, and see FLINT LCR FOR FOIA...pdf) acknowledges this will be a technical violation. The draft LCR clearly indicates that the minimum was not achieved. MDEQ responds "we are discussing options" to handle this technical violation. In the August 20<sup>th</sup> revised final report, even this technical violation magically disappears (see comments box on page 1....).

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Friday, July 10, 2015 11:28 AM  
**To:** 'Michael Glasgow'  
**Cc:** Brent Wright  
**Subject:** RE: lead/copper

we are discussing options regarding this and future rounds of monitoring and will get back with you.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Thursday, July 09, 2015 2:19 PM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright  
**Subject:** Re: lead/copper

Adam,

I just sent the last of the samples to the lab today. Unfortunately we did not reach 100 samples. I believe the count I have is 76 total. Since we have had a few more hits this round, we are going to continue to solicit samples for our own informational purposes. I am disappointed in the turnout of sampling, we distributed close to 200 sample bottles. With this monitoring violation will we be required to collect another round of 100 samples?

#### **KEY POINTS:**

- 1) FLINT HAS LOTS OF LEAD PIPE, NO CORROSION CONTROL TREATMENT, AND HAS HAD NO LEGITIMATE LCR TESTING FOR AT LEAST A YEAR.
- 2) AMONGST LOW INCOME INFANTS, BREAST FEEDING RATES ARE LOWER, AND FORMULA USE IS HIGHER. MANY FLINTS RESIDENTS CANNOT AFFORD TO FLUSH DUE TO HIGH WATER RATES. THEY CANNOT AFFORD BOTTLED WATER. THIS IS AN UNPRECEDENTED SITUATION AND EPA NEEDS TO TAKE THIS SERIOUSLY. NOW.
- 3) WE HAVE ONE CHILD WITH ELEVATED BLOOD LEAD ALREADY...IN FACT, THAT IS THE ONLY REASON WE KNOW ABOUT ANY OF THE ABOVE.
- 4) MDEQ IS STILL PUBLICLY INSISTING FLINT WATER HAS TESTED SAFE, IS SAFE, AND THAT FLINT HAS **NO VIOLATIONS** of any sort.

I believe that someone at HQ or in R5 should immediately take decisive action on this issue to protect the public.

Marc

**Prysby, Mike (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Wednesday, August 20, 2014 3:39 PM  
**To:** 'bwright@cityofflint.com'; Mike Glasgow; djohnson@cityofflint.com  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Flint - 02310 Fecal Positive / Boil order  
**Attachments:** Boil PN Rescind Notice.doc

Attached is a rescind boil notice for you to use. Your public notice requirements include sending us signed and dated copies of the notices you issued within 10 days – we need copies by Monday, August 25, 2014. As a heads up, failure to do so would result in a violation with possible monetary penalties.

You also need to put the public notices (boil notice and lift notice) on your website – the media took liberties on what parts were published, and you need the whole notice available.

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Friday, August 15, 2014 5:48 PM  
**To:** 'bwright@cityofflint.com'; Mike Glasgow; 'djohnson@cityofflint.com'  
**Cc:** Busch, Stephen (DEQ); Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Prysby, Mike (DEQ); Joseph, Mark (DEQ); Skinker, Bethel (DEQ); Cook, Pat (DEQ)  
**Subject:** Flint - 02310 Fecal Positive / Boil order

**Summary:**

8/12/14 – 3 routine samples test positive for total coliform (TC), Cedar Reservoir, Site 4 & Site 5.

Free Chlorine was 0 and Total Cl around 0.1 ppm.

8/13/14 – 9 repeat samples collected, 7 TC positive & 1 fecal positive downstream of Site 4  
Site 4 is a Taco Bell, downstream site is a repair shop with a questionable tap.

8/14/14 – 2<sup>nd</sup> set of 9 repeat samples collected, 8 repeats Non Detect and Site 4 TC positive (downstream site with the fecal positive was cleaned and is now non detect.) Chlorine has been increased and detected at 0.2 – 0.5 ppm Free Cl.

With the confirmed fecal positive, the MCL has been elevated to require a Tier 1 Public Notice to be issued within 24 hrs of notification. The DEQ is issuing a Boil Water Order to the affected area (Public Notice attached). A 2<sup>nd</sup> Tier 2 MCL PN may be necessary once the August monitoring period is complete and the situation is resolved.

The City of Flint has been instructed to issue the Tier 1 PN according to their Emergency Response Plan, flush the system, and collect 2 sets of 5 samples 24 hrs apart in the affected area before lifting the boil order.

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

**[System Name]**  
**BOIL WATER NOTICE LIFTED**  
**[date]**

It is no longer necessary to use boiled or bottled water for drinking or cooking.

On [date] you were notified of the need to boil all tap water used for drinking and cooking. Corrective measures have been taken and no coliform bacteria have been detected in follow-up testing of the system's water. The water is safe to drink. We apologize for any inconvenience and thank you for your patience.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

For more information, please contact [name of water system contact] of [system name or organization] at [phone number, email address, and mailing address].

This notice is being sent to you by [system name], water supply serial number [WSSN].



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

November 9, 2015

Mr. Michael Glasgow  
Utilities Administrator  
City of Flint  
4500 North Dort Highway  
Flint, Michigan 48505

WSSN: #2310

Dear Mr. Glasgow:

SUBJECT: Water Supply – City of Flint (City) – Compliance Communication  
Lead and Copper Rule Compliance Sampling Sites

The City community water system is subject to the requirements of the Michigan Safe Drinking Water Act, 1976 Public Act 399, as amended (Act 399). According to Department of Environmental Quality (DEQ) records, City reports submitted to the DEQ regarding Lead and Copper Rule (LCR) compliance monitoring information have been certified by the City that all LCR compliance monitoring since 1992 has been conducted at sampling sites meeting the Tier 1 criteria listed under subrule 1c of administrative rule 710a (R325.10710a).

The City's recent efforts to electronically convert customer service line information and statements by some of the City's certified operators conflict with the information provided in the City's LCR compliance monitoring certification reports.

Therefore, the DEQ is hereby requesting the City provide additional information and documentation regarding all 324 historic LCR compliance sampling sites.

As of November 3, 2015, the City's electronic database of customer service connections listed 10,895 records of converted customer service connection index cards. The City has recently indicated it has a total of 29,072 customer service connections, leaving approximately 18,177 records left to be converted. These digital records include a listing of the service line material.

The DEQ has obtained a copy of these 10,895 digital records and cross referenced them with the addresses for the City's 324 historic LCR compliance monitoring sites. However, only 46 of the 324 sites were able to be matched at the current time. Of these 46 sites, only 6 sites contained information confirming the Tier 1 site criteria based on having lead service line materials. 14 sites were listed as having no available information (n/a), and require additional documentation to justify being designated as a Tier 1 sample site having a lead service line. The remaining 26 cross referenced sites were listed as having copper service line materials which directly conflicts with the City's LCR reports certifying these sites as Tier 1 based on the criteria of having a lead service line. The City needs to provide additional information to the DEQ demonstrating these sites meet the Tier 1 site criteria or we will assume they do not.

The City's remaining 278 historic LCR compliance sampling sites must also be reviewed and will require additional documentation to justify being designated as Tier 1 sample sites.



Our office has provided the enclosed table that lists all 324 of the City's historic LCR compliance monitoring sites, when each site was utilized, the City's certification information for each site, and information cross referenced from the City's customer service line database. The City can use the far right column in this table, labeled *Justification of Lead Service Line and Tier 1 Criteria*, to summarize the City's justification for certifying these sites as Tier 1 and having a lead service line. Any supporting documentation regarding the justification for each site needs to be provided as separate attachments.

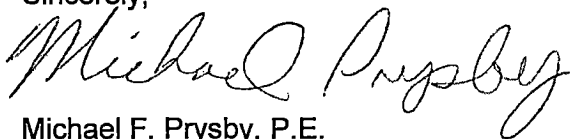
As a reminder, in accordance with subrule 1 of administrative rule 710a (R325.10710a), by January 1, 1992, the City was to have completed a materials evaluation of its distribution system to identify a pool of targeted sampling sites from which all first draw samples are collected. This evaluation was required to include information from:

- Special Monitoring for Corrosivity Characteristics
- All plumbing codes, permits, and records in the files of the building department or departments that indicate the plumbing materials installed within publically and privately owned structures connected to the water distribution system.
- All inspections and records of the distribution system indicating material composition of customer service connections.
- Water quality information that indicates locations which may be particularly susceptible to high lead or copper concentrations.

**The completed table and all supporting documentation must be provided to our office as soon as possible, but by no later than December 30, 2015, prior to the next LCR compliance monitoring period.**

Please contact me at 517-290-8817 or prysbym@michigan.gov at your earliest convenience to discuss this matter in more detail.

Sincerely,



Michael F. Prysby, P.E.  
District Engineer  
Lansing District Office  
Office of Drinking Water and  
Municipal Assistance

cc: Mr. Robert Bisnick, City of Flint  
Mr. Brent Wright, City of Flint  
Mr. Howard Kroft, City of Flint  
Ms. Natasha Henderson, City of Flint  
Mr. Jim Sygo, Chief Deputy Director, DEQ  
Mr. Stephen Busch, DEQ  
Mr. Adam Rosenthal, DEQ

**Prysby, Mike (DEQ)**

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**From:** Michael Glasgow <mglasgow@cityofflint.com>  
**Sent:** Tuesday, September 09, 2014 9:47 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright; Daugherty Johnson; Howard Croft  
**Subject:** September 2014 Boil Water Notice Timeline  
**Attachments:** Boil Water Advisory Event Timeline # 2.docx

Gentlemen,

Attached is a timeline of events that led us to the recent boil water notice. It shows all sampling and results from 9/2 thru today.

FYI:

I was just talking with a couple of employee's from the Water Service Center who have been helping us with our investigation of the the distribution system. It seems that they have found one of the possible causes of our recent issues. A 36" transmission main not far west of the treatment plant had a valve that was closed, and the 24" transmission main that leads west also has a valve that is closed. The 36" valve was opened, however the valve on the 24" is inoperable. With these valves closed, it appears the water leaving the plant has no direct route to the west side of the city (or the West Side Reservoir)

Mike Glasgow  
City of Flint Water Plant

# Letter Buckslip

13-Oct-15

ID:	GOV00041	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office _____ Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ EL Delogged _____
Date of letter:	10/9/2015	
Date received:	10/12/2015	
Date due:	10/19/2015	
Reply date:		
Last name:	Ordway	
First name:	Dustin	
Organization:	Ordway Law Firm, PLLC	
Subject:	Independent Review to Resolve the Flint Drinking Water Issues	
Reply to:		
Author:		
Owner:	OLSZEWSKIR	

<u>Action</u>	<u>Action Date</u>	<u>Due Date</u>	<u>Entity</u>	<u>Signature</u>	<u>Owner</u>	<u>CCs</u>
Assigned 1	10/13/2015	10/19/2015	EXE	RD	OLSZEWSKIR	Thelen Sygo/Shaler Shekter Smith Devereaux

**Comments:** Original to EXE (George)

George, please prepare response. See Mary Beth for suggestions. Mbt

*George has  
responded.*

GOV 00041

**Thelen, Mary Beth (DEQ)**

**From:** Laura Stoken <stokenl@michigan.gov>  
**Sent:** Monday, October 12, 2015 4:44 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** Action Item [Ordway] - Constituent Case Referral  
**Attachments:** {cid5A5CF5FD6857BF408682B8C240366A71@michigan.gov}20151009111831459.pdf

Hello -

Governor Snyder's office has received a constituent inquiry from Dustin Ordway.

To help us track the correspondence, we've assigned this inquiry the unique reference number of S290616.

I would appreciate a copy of correspondence exchanged with this constituent on Governor Snyder's behalf, but I understand you may be limited by law in what you can share. Please let me know if you are unable to follow up with this constituent or if you believe I have made a mistake in referring this to your attention.

As always, please do not hesitate to contact me with any questions or concerns. Thank you for your assistance.

Laura Stoken  
Office of the Governor  
O: 517-335-7858

---

**CASE OPEN DATE: 10/9/2015 11:17 AM**

**NAME:** Dustin Ordway  
**ADDRESS:**  
**CITY/STATE/ZIP:** , MI  
**E-MAIL:** [dpordway@ordwaylawfirm.com](mailto:dpordway@ordwaylawfirm.com)  
**TELEPHONE:**

**CONSTITUENT INQUIRY:** see attached



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING

60V00041



DAN WYANT  
DIRECTOR

October 15, 2015

Mr. Dustin P. Ordway  
Ordway Law Firm, PLLC  
3055 Shore Wood Drive  
Traverse City, Michigan 49686



Dear Mr. Ordway:

SUBJECT: Independent Review to Resolve the Flint Drinking Water Issues

Thank you for your October 9, 2015, letter to Governor Rick Snyder regarding an independent review to resolve the city of Flint's drinking water issues. Governor Snyder has referred your letter to the Department of Environmental Quality (DEQ) for response.

The DEQ appreciates your offer to assist the State of Michigan in conducting an after action review with respect to the issues facing the city of Flint's drinking water system. Our current top priority is to ensure that we are protecting public health. We recognize that an after action review will be beneficial to our processes once we have had the opportunity to work through this initial phase. While we currently do not know any specific details of how we will implement the after action review, we will keep your letter on file for further consideration once that process begins.

If you have any questions, please contact me at 517-284-6719 or at krisztiang@michigan.gov.

Once again, thank you for your interest.

Sincerely,

George L. Krisztian  
Flint Action Plan Coordinator  
Laboratory Director  
517-284-6719

cc: Governor Rick Snyder  
Mr. Dan Wyant, Director, DEQ  
Mr. Jim Sygo, Chief Deputy Director, DEQ  
Ms. Liane J. Shekter Smith, DEQ



DUSTIN P. ORDWAY  
Admitted in Illinois, Michigan and New York

T 616-450-2177  
F 377-317-6212  
DPOrdway@ordwaylawfirm.com  
www.ordwaylawfirm.com

October 9, 2015

**BY FAX**

Governor Rick Snyder  
PO Box 30013  
Lansing, MI 48909

Re: Independent Review to  
Resolve the Flint Drinking Water Issues

Dear Governor Snyder:

You have taken decisive steps to fix the Flint drinking water problem. Now, let's reinvent the way accusations and claims are handled. Hire an independent expert to take the lead investigating, reporting and/or facilitating settlement among all parties.

I am an environmental attorney and mediator with nearly 30 years' experience specializing in environmental law and 20 years serving as a mediator. I have the respect of the legal community, having served as chair of the state bar's environmental law section. I am highly-rated by my peers and am not affiliated with any party. An independent review of decisions made in the past, the water quality data and other relevant information and of assertions and claims made by individuals could help quell the public outcry and most efficiently resolve what otherwise may become years of litigation.

I would be happy to discuss this with you and your representatives at your convenience.

Very truly yours,

Dustin P. Ordway

20 S. Clark Street, Suite 2310  
Chicago, Illinois 60603-1806

3055 Shorewood Drive  
Traverse City, Michigan 49686

217 Broadway, Suite 707  
New York, New York 10007

**FAX COVER SHEET**

TO	
COMPANY	
FAXNUMBER	15173356863
FROM	Dustin Ordway
DATE	2015-10-09 15:13:32 GMT
RE	Letter for Governor Snyder

**COVER MESSAGE**

Please deliver the attached to Governor Snyder.

Dustin P. Ordway  
Ordway Law Firm, PLLC  
DPOrdway@ordwaylawfirm.com<mailto:DPOrdway@ordwaylawfirm.com>  
Cell 616.450.2177  
Fax 877.317.6212  
www.ordwaylawfirm.com<http://www.ordwaylawfirm.com/>

Michigan  
3055 Shore Wood Dr.  
Traverse City, MI 49686  
Office 231.590.2228

2080 Monroe Avenue NW  
Grand Rapids, MI 49505  
Office 661-451-2177

New York  
217 Broadway, Suite 707  
New York, NY 10007  
Office 646-942-3131

Chicago  
20 S. Clark Street, Suite 2310  
Chicago, IL 60603-1806

**CONFIDENTIALITY NOTICE:** This e-mail may contain information that is privileged, confidential or otherwise protected from disclosure. If you are not the intended recipient of this e-mail, please notify the sender immediately by return e-mail; delete it; and do not disseminate or copy it. Thank you.



FILE

## DWSD and STATE OF MICHIGAN ISSUES March 14, 2012

### I. Flint & KWA

Flint has been a contract customer of DWSD since 1965. The original 35-year contract term expired in 2000, but service continues under the terms of the original contract, pending notification to terminate (the contract requires a one-year notice) from either party. The original contract contained estimated annual volumes for every year covered by the contract, and contained a "take or pay" provision equal to one-half of the estimated figures. In 1990, after Flint's failure to purchase up to 50% of the estimated amounts in the contract, DWSD and Flint negotiated an amendment that lowered the annual estimates, but left all other terms intact. Flint sells DWSD water to Genesee County on a wholesale basis via terms of an agreement between those two parties that was originally dated 1973, with a 2013 expiration date.

#### (a) KWA

Genesee County has been exploring alternative sources of water for a decade. That effort is led by the County Drain Commissioner Jeff Wright. The Karegnondi Water Authority (KWA) was established to more formally coordinate the evaluation of water supply alternatives. KWA consists largely of Lapeer County, Genesee County and Flint. The KWA project involves a \$600,000,000 investment to pump and transmit raw water from Lake Huron to Flint. Even KWA acknowledges it is not a better financial arrangement than DWSD for the next 30 years. KWA is presently requesting Flint to agree to participate in a \$10,000,000 engineering study and reports construction could start late 2012 or spring 2013.

DWSD has not ignored this effort. Instead a technical and financial committee consisting of KWA and DWSD representatives has been working cooperatively to DWSD / Flint / Genesee County for various options for the authority. DWSD Director McCormick and BOWC Chair Fausone have met with Mr. Wright and Flint financial manager, Mr. Brown, since the new year.

The KWA communities comprise about 6 percent of the DWSD water revenue structure. DWSD and its customers (through the TAC, etc.) have expressed a desire to keep the KWA communities "on board", but have been reluctant to pursue alternatives which would do so at a cost to other customers more than the 6 percent revenue requirement increase that would occur if DWSD just let them leave.

#### (b) Capacity

Through its five water treatment plants DWSD has the capacity to produce up to 1.7 billion gallons per day (bgd) of water – but current demand levels are closer to 1.0 bgd. DWSD has a large amount of available "excess" production capacity, which has contributed to recent rate increases – DWSD has maintained this capacity as water demands and sales have dropped.





DWSD's new capital improvement plans, and the mission of the upcoming master plan update, are seeking the best manner to "downsize" capacity and still meet service levels to the entire Southeast Michigan region. At the same time, the "independent" KWA plan seeks to unnecessarily add new water production capacity of approximately 60 to 80 million gallons per day (mgd) to the region, while taking that demand away from the DWSD system. Clearly, this is not an efficient nor strategic investment of public dollars in the region.

### **(c) Impact and Compliance**

At DWSD water supply and sewage disposal functions are so fundamentally intertwined as to be inseparable. Administration, finance, procurement, maintenance, security, metering, customer service and billing, enterprise system investments, programs and initiatives that are essential for one utility function are also required for the other. The Water / Sewer Rate Interrelationship is based on the reality that DWSD is a unitary department that manages and operates both Detroit's water system and its sewer system. The extent that DWSD resources and facilities directly serve both the water and sewer systems is apparent in that only approximately 40 percent of DWSD employees perform "solely water" or "solely sewer" functions. These employees are primarily located at the treatment plants. The remaining 60 percent carry out activities that benefit both systems. The costs of these resources and facilities are shared between the two utility systems. The water rates provide the funding mechanism for the water system's share and the sewer rates provide the funding mechanism for the sewer system's share. The ability of the sewer system to carry out its mission and achieve long term compliance with the Clean Water Act is directly impacted by the ability of the water system to provide its share of the funding for these resources common to the water and sewer systems.

DWSD is requesting the State, which has appointed a financial manager for Flint, consider a regional approach to decisions of water and sewerage services. The State should not encourage or authorize DWSD customers to cannibalize the existing system, and to add additional regional debt thereby increasing the pressure on DWSD's customers to support existing debt and operations.

## **II. Distressed Communities and Customers**

In recent years, the global economic issues have had a significant impact on Southeast Michigan and DWSD. With significant loss of water use (sales) and the commensurate sewer use (sales), rates for both services have risen substantially to cover costs associated with past and current capital investments. Compounding the decline in sales is the increasing bad debt on the systems from both Detroit and customer communities.

Detroit Public Schools and Highland Park, both under State oversight, are in significant arrearage to DWSD. The DPS accounts receivable is approximately \$11,000,000. The Highland Park account receivable is at \$9,576,165.



In recent months, the problems in Highland Park have resulted in the State approaching DWSD to assist Highland Park due to potentially significant public health issues in their drinking water system.

Other Southeast Communities are also demonstrating an inability to pay DWSD for services provided to their communities. In addition to Highland Park, six additional DWSD customer communities including Inkster and Hamtramck have increasing past due amounts. For example, the City of Inkster, which has recently received State funds "to keep the lights on", owes DWSD \$1,595,844. Additionally, the City of Detroit which is undergoing financial review by the State has a general fund arrearage to DWSD of approximately \$8,000,000.

It is quite likely DWSD will be asked to assist or manage some or all of the failing community's water and waste water systems because DWSD is uniquely positioned to do so. We recognize the critical role DWSD might have in these issues. However, it is quiet ironic that the State would seek DWSD's assistance through assuming responsibility for failing systems, and the economic risk that goes with that, at the same time the State would allow or facilitate DWSD's largest customer to exit the system. Add to this that the most significant outstanding debt owed DWSD are communities under State oversight or on the watch list. These actions in total are of significant detriment to DWSD, further hampering DWSD's ability to address investment necessary to effect long term compliance.

DWSD is requesting the State require distressed communities, and entities under State control, to pay for services provided and to consider water and sewer issues in its regional decision.

## **Thelen, Mary Beth (DEQ)**

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**From:** Copen, Leigh (DEQ)  
**Sent:** Wednesday, October 21, 2015 4:28 PM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** FW: NEWS RELEASE: Gov. Rick Snyder announces Flint Water Task Force to review state, federal and municipal actions, offer recommendations

**Importance:** High

FYI ... It was released at 2:07 p.m.



**Leigh M. Copen**  
Senior Executive Management Assistant to  
Madhu R. Anderson, Deputy Director, Economic & Strategic Initiatives  
Mary C. Goodhall, Organizational Excellence Coordinator  
Department of Environmental Quality  
517 284 6702 | [CopenL1@michigan.gov](mailto:CopenL1@michigan.gov)



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**From:** VanSickle, Michele (GOV)  
**Sent:** Wednesday, October 21, 2015 2:35 PM  
**To:** Copen, Leigh (DEQ)  
**Subject:** FW: NEWS RELEASE: Gov. Rick Snyder announces Flint Water Task Force to review state, federal and municipal actions, offer recommendations

**Michele VanSickle**  
Executive Assistant for Richard Baird and Mike Finney  
Executive Office of Governor Rick Snyder  
(517) 241-5621  
[vansicklem2@michigan.gov](mailto:vansicklem2@michigan.gov)

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**From:** GOV Newsroom [<mailto:govnewsroom@govsubscriptions.michigan.gov>]  
**Sent:** Wednesday, October 21, 2015 2:07 PM  
**To:** VanSickle, Michele (GOV) <[vansicklem2@michigan.gov](mailto:vansicklem2@michigan.gov)>  
**Subject:** NEWS RELEASE: Gov. Rick Snyder announces Flint Water Task Force to review state, federal and municipal actions, offer recommendations

## News Release

**Contacts:** Sara Wurfel or Dave Murray  
517-335-6397

**FOR IMMEDIATE RELEASE**  
Wednesday, Oct. 21, 2015

**Gov. Rick Snyder announces Flint Water Task Force to review state, federal and municipal actions, offer recommendations**

*Experts in public health, water management, environmental protection to focus on steps to protect residents*

LANSING, Mich. – Gov. Rick Snyder today announced the creation of an independent advisory task force charged with reviewing actions regarding water use and testing in Flint and offer recommendations for future guidelines to protect the health and safety of all state residents.

Task force members include experts in public health and medicine, water management, and environmental protection from both sides of the aisle, and will be co-chaired by Ken Sikkema of Public Sector Consultants and Chris Kolb, of the Michigan Environmental Council. Also serving will be Dr. Matthew Davis of the University of Michigan Health System, Eric Rothstein, of the Galardi Rothstein Group and Dr. Lawrence Reynolds of Mott Children's Health Center in Flint.

"Transitioning back to the Detroit Water and Sewerage Department-Great Lakes Water Authority is a good first step to protecting public health in Flint, but it's not the last step," Snyder said. "Bringing in outside experts to evaluate our actions and help monitor and advise on potential changes to law, procedures and practices will be key to continuing work on the comprehensive action plan and ensuring safe drinking water for all the residents in Flint and all of Michigan."

Snyder said the administration will fully cooperate with task force members, saying he wants an unbiased report focusing on steps taken in the past and recommendations that could improve practices to ensure all residents have access to safe, clean water.

**Ken Sikkema** is a senior policy fellow at Public Sector Consultants, where he specializes in public finance, environment, and energy policy. Prior to joining

the firm, Sikkema served in both the Michigan House and Senate, culminating with four years as Senate majority leader. He has also served as both an adjunct and visiting professor at Grand Valley State University.

**Chris Kolb** is president of the Michigan Environmental Council, a statewide coalition of 70 environmental, public health and faith-based nonprofit groups. Before joining the MEC, Kolb represented Ann Arbor in the state House for six years and served six years on the Ann Arbor City Council. He has been president of the MEC for six years.

**Matthew Davis, M.D., M.A.P.P.**, is professor of pediatrics and internal medicine at the University of Michigan Health System and professor of public policy at the Gerald R. Ford School at the University of Michigan, having joined the faculty in 2000. Davis also is a professor of health management and policy at the School of Public Health. He previously served as the chief medical executive of the Michigan Department of Community Health/Department of Health and Human Services.

**Eric Rothstein** is a national water issues consultant and principal at the Galardi Rothstein Group. He served as an independent advisor on the creation of the Great Lakes Water Authority. Rothstein also has served as Jefferson County, Alabama's rate consultant and municipal adviser for litigation related to the county's bankruptcy and issuance of \$1.7 billion in sewer warrants and led strategic financial planning for the City of Atlanta's Department of Watershed Management. He has more than 30 years of experience in water, wastewater and stormwater utility finance and rate-making assessments.

**Lawrence Reynolds, M.D.**, is a pediatrician in Flint who serves as president of the Mott Children's Health Center. He received his medical degree from Howard University College of Medicine and has been in practice for 36 years. He has served as president of the Genesee County Medical Society and the Michigan Chapter of the American Academy of Pediatrics. He has been honored for his humanitarian and advocacy efforts on behalf of children from the Community Foundation of Greater Flint.

Snyder has said reconnecting with the authority is a critical step to resolving water quality issues and addressing related health concerns. It will not immediately resolve the city's problem with lead service lines or aging infrastructure. It will take time for pipes in Flint to become coated with the phosphate corrosion control.

To best protect public health, state and local authorities will continue to carry out steps outlined on Oct. 2 in a comprehensive action plan, including continued testing, the use of faucet filters and providing residents with accurate information about steps to eliminate lead exposure. The Michigan Departments of Environmental Quality and Health and Human Services are continuing to provide free water filters, free lead testing through the state laboratory for Flint water customers, and hiring additional staff to conduct health exposure monitoring for lead in drinking water.

####

STAY CONNECTED:



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This email was sent to [vansicklem2@michigan.gov](mailto:vansicklem2@michigan.gov) on behalf of: The Executive Office of the Governor · 111 South Capitol Avenue · Lansing, MI 48909 · 517-335-7858

**Thelen, Mary Beth (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Wednesday, October 14, 2015 5:52 PM  
**To:** Sean Kammer  
**Cc:** Thelen, Mary Beth (DEQ)  
**Subject:** RE: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

Dear Sean,

Per our telephone conversation, thank you for confirming a meeting at **10:00-11:30** on Friday, October 16, with the City Administrator, Natasha Henderson, in her office.

The following will be attending that meeting from the state:

George Krisztian, City of Flint Plan Coordinator and Laboratory Director, Department of Environmental Quality  
Shelly Edgerton, Deputy Director, Department of Licensing and Regulatory Affairs  
Dr. Linda Dykema, Department of Health and Human Services (in person OR by telephone)  
Dr. Eden Wells, Chief Medical Executive, Department of Health and Human Services (by telephone)

Please provide me a call in number for the 1 or 2 persons who may need to call in.

We can also discuss a WWTP Tour tomorrow once you know more. I do know that we most likely will not be able to do the tour from 1:00-2:00/2:15 but could do it after that time or next week. Whatever works best for the City – we will try and be flexible for this arrangement.

Thanks again for all your help today – I know you are really busy.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
Thelenm2@michigan.gov

**From:** Sean Kammer [mailto:skammer@cityofflint.com]  
**Sent:** Wednesday, October 14, 2015 4:18 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** Re: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

Mary Beth,

Yes, I received your emails. My phone number is 810-391-7771.

The City Administrator has a few regular meetings on Friday morning. She is available anytime after 11am.

As for scheduling a tour of the WWTP, I would have to confirm the availability of Howard Croft. I should know that by tomorrow morning.

Thank you,

On Wed, Oct 14, 2015 at 10:15 AM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

Hi Sean,

Just making sure you are receiving my emails. Sometimes our Outlook can be a bit crazy and when I looked at my sent items it had this funny ' next to your email address.

Can you acknowledge receipt so that I know you received it this morning?

Also if I could have your telephone number that would be great.

Thanks.

Mary Beth

Mary Beth Thelen

Management Assistant to Director Dan Wyant

Department of Environmental Quality

Constitution Hall, 6th Floor South

Phone: 517-284-6712 or 284-6700 (new numbers)

Fax: 517-241-7401

[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

**From:** Sean Kammer [<mailto:skammer@cityofflint.com>]

**Sent:** Wednesday, October 14, 2015 8:28 AM

**To:** Thelen, Mary Beth (DEQ)

**Cc:** Natasha Henderson



**Subject:** Re: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

Mary Beth,

Hello, this is Sean Kammer, Assistant to the City Administrator. Please let me know when it would be convenient to meet. Friday afternoon appears to be open to schedule a meeting.

Thank you,

Sean

On Tue, Oct 13, 2015 at 6:03 PM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

Thanks, I will get back to all of you on a time for Friday.

Mary Beth

Sent from my iPad

On Oct 13, 2015, at 5:18 PM, "Natasha Henderson" <[nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)> wrote:

Hello Mary Beth,

The best date to meet for myself and Howard on-site appears to be Friday of this week, as this is the week we have our Receivership Transition Advisory Board Meeting. Please work with Sean Kammer to schedule a time if this date works, as he has access to our calendars. His email is [skammer@cityofflint.com](mailto:skammer@cityofflint.com),

Thanks,

Natasha L. Henderson, City Administrator

**City of Flint, Michigan**

**1101 S. Saginaw St.**

**Flint, MI 48502**

**Email: [nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)**

**Phone: (810) 237-2057**

**[www.cityofflint.com](http://www.cityofflint.com)**

On Tue, Oct 13, 2015 at 4:37 PM, Krisztian, George (DEQ) <[krisztiang@michigan.gov](mailto:krisztiang@michigan.gov)> wrote:

Hi Natasha,

I look forward to working with everyone there. Can you please work with Mary Beth to get the first meeting Scheduled? If possible, I would like the first meeting to take place this week. A lot of things are happening and I want to make sure that we are all coordinated in this effort.

Thank you!

George

George L. Krisztian

Flint Action Plan Coordinator

Laboratory Director

Michigan Department of Environmental Quality

Desk ph (517) 284-6719

Cell ph (517) 204-0381

**From:** Natasha Henderson [<mailto:nhenderson@cityofflint.com>]

**Sent:** Tuesday, October 13, 2015 3:14 PM

**To:** Krisztian, George (DEQ); Sean Kammer

**Cc:** Dayne Walling; Howard Croft ([hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ); Dykema, Linda D. (DHHS); Edgerton, Shelly (LARA); Lyon, Nick (DHHS); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)

**Subject:** Re: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

Hello George,

I will serve as the point of contact for the City to schedule on-going meetings. Also, I have included my Assistant, Sean Kammer in this email.

Thanks,

Natasha L. Henderson, City Administrator

City of Flint, Michigan

1101 S. Saginaw St.

Flint, MI 48502

Email: [nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)

Phone: (810) 237-2057

[www.cityofflint.com](http://www.cityofflint.com)

On Mon, Oct 12, 2015 at 11:36 AM, Krisztian, George (DEQ) <[krisztiang@michigan.gov](mailto:krisztiang@michigan.gov)> wrote:

Mr. Mayor,

I would like to schedule weekly meetings with you and your key staff so that we can ensure that we have a coordinated effort in resolving the water issue. I would like for the initial meetings to be face to face and I, along with others, will come to Flint for these.

If possible I would like the first meeting to be either Tuesday or Wednesday of this week (10/13 or 10/14) and I would also like to ask for a tour of the Flint Water Treatment Plant.

Mary Beth Thelen will serve as the DEQ's point on coordinating these meetings. Can you please let us know who would be the appropriate contact on your end?

Thank you very much!

George

George L. Krisztian

Flint Action Plan Coordinator

Laboratory Director

Michigan Department of Environmental Quality

Desk ph (517) 284-6719

Cell ph (517) 204-0381

--  
Sean Kenneth Kammer, MPA

Assistant to the City Administrator

City of Flint, Michigan

1101 S. Saginaw St.

Flint, MI 48502  
810-237-2025

----- Forwarded message -----

From: "Thelen, Mary Beth (DEQ)" <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)>

To: Sean Kammer <[skammer@cityofflint.com](mailto:skammer@cityofflint.com)>

Cc:

Date: Wed, 14 Oct 2015 12:39:33 +0000

Subject: RE: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

Another item: If there is any way to make the meeting in the morning, then Linda Dykema can attend. She is from DHSS. She cannot change her schedule for the afternoon.

However, we will take what we can get. Thanks for your consideration of morning as well.

Thanks.

Mary Beth

Mary Beth Thelen

Management Assistant to Director Dan Wyant

Department of Environmental Quality

Constitution Hall, 6th Floor South

Phone: 517-284-6712 or 284-6700 (new numbers)

Fax: 517-241-7401

[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

---

**From:** Thelen, Mary Beth (DEQ)

**Sent:** Wednesday, October 14, 2015 8:34 AM

**To:** 'Sean Kammer'

**Subject:** RE: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

**Importance:** High

We can meet anytime really on Friday.

We will need: 90 minutes for a meeting

We will need : WWTP Tour as well probably 60-90 minutes (but if you can't do this on Friday, then we can always schedule that next week)

If we could do both on the same date great, but for sure the 90 minute meeting. If we schedule both the same day then it doesn't matter which one we do first.

If we can't do the tour on Friday, then I need a day from you for next week.

For the meeting, one or two people will need to be by telephone.

If you would rather talk by phone, please let me know – 284-6712. Please let me know as soon as possible what may work for all of you!

Thank you so much!! I'm here all day, plus! ☺

Mary Beth

Mary Beth Thelen

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Phone: 517-284-6712 or 284-6700 (new numbers)

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[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

**From:** Sean Kammer [<mailto:skammer@cityofflint.com>]

**Sent:** Wednesday, October 14, 2015 8:28 AM

**To:** Thelen, Mary Beth (DEQ)

**Cc:** Natasha Henderson

**Subject:** Re: Preliminary and Deliberative: Not subject to FOIA Weekly meetings

Mary Beth,

Hello, this is Sean Kammer, Assistant to the City Administrator. Please let me know when it would be convenient to meet. Friday afternoon appears to be open to schedule a meeting.

Thank you,

Sean

On Tue, Oct 13, 2015 at 6:03 PM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

Thanks, I will get back to all of you on a time for Friday.

Mary Beth

Sent from my iPad

On Oct 13, 2015, at 5:18 PM, "Natasha Henderson" <[nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)> wrote:

Hello Mary Beth,

The best date to meet for myself and Howard on-site appears to be Friday of this week, as this is the week we have our Receivership Transition Advisory Board Meeting. Please work with Sean Kammer to schedule a time if this date works, as he has access to our calendars. His email is [skammer@cityofflint.com](mailto:skammer@cityofflint.com).

Thanks,

Natasha L. Henderson, City Administrator

City of Flint, Michigan

1101 S. Saginaw St.

Flint, MI 48502

Email: [nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)

Phone: (810) 237-2057

[www.cityofflint.com](http://www.cityofflint.com)

On Tue, Oct 13, 2015 at 4:37 PM, Krisztian, George (DEQ) <[krisztiang@michigan.gov](mailto:krisztiang@michigan.gov)> wrote:

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Thank you!

George

George L. Krisztian

Flint Action Plan Coordinator

Laboratory Director

Michigan Department of Environmental Quality

Desk ph (517) 284-6719

Cell ph (517) 204-0381

**From:** Natasha Henderson [<mailto:nhenderson@cityofflint.com>]

**Sent:** Tuesday, October 13, 2015 3:14 PM

**To:** Krisztian, George (DEQ); Sean Kammer

**Cc:** Dayne Walling; Howard Croft ([hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen



(DEQ); Dykema, Linda D. (DHHS); Edgerton, Shelly (LARA); Lyon, Nick (DHHS); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)

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Assistant to the City Administrator

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Cc:  
Date: Wed, 14 Oct 2015 12:34:26 +0000  
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Sean Kenneth Kammer, MPA

Assistant to the City Administrator

City of Flint, Michigan

1101 S. Saginaw St.

Flint, MI 48502

810-237-2025

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Sean Kenneth Kammer, MPA

Assistant to the City Administrator

City of Flint, Michigan

1101 S. Saginaw St.

Flint, MI 48502

810-237-2025



**Thelen, Mary Beth (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, April 17, 2013 9:51 AM  
**To:** Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ)  
**Cc:** Shaler, Karen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: KWA and City of Flint

Director Wyant, Deputy Director Sygo, and Liane,

A response at this point may be moot as Flint and Genesee Co. already held a press conference yesterday rejecting the DWSD offer.

It is also unclear whether DWSD provided its offer directly to Flint and Genesee Co. by the deadline in Treasurer Dillon's letter. However, Flint and Genesee Co. still took the offer under consideration.

Our office concurs with both Flint and Genesee Co. that the offers provided by DWSD were incomplete.

Of the two scenarios provided by DWSD it appeared that only Scenario 2 was listed as potentially being more cost effective. However, this scenario did not address the following:

1. The DWSD scenarios are based on 40 MGD of service capacity. However, the KWA project is providing 60 MGD of initial capacity with potential expansion to 75 MGD in the future. Therefore, in order for a more direct comparison the DWSD scenario would need to increase capacity to 60 MGD, which would increase fixed rate commodity costs as well as the capital costs for the Huron Plant that DWSD was planning to allocate to Flint and Genesee Co., presumably by as much as 50%.
2. DWSD proposals cover a 30 year period to 2042, but fail to recognize that after this period bond payments for the KWA project will be complete and result in a significant reduction in costs for the KWA option.
3. While DWSD indicates that Flint and Genesee Co. would be given "broadened representation", it remains unclear exactly what this means in terms of actual control in the decision making process.
4. This scenario continues to rely on a single transmission system and would require the City of Flint to maintain its WTP for emergency purposes and these costs do not appear to be included. In addition, use of the Flint WTP as an emergency backup would leave Genesee Co. without an adequate backup supply to meet their 30 year needs.

Again, without DWSD providing the specific details of these proposals, it is difficult to provide a true comparative analysis, and as such Flint and Genesee Co. appear to be justified in their rejection of these proposals.

Please let me know if you require any further response.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Tuesday, April 16, 2013 9:59 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)

**Cc:** Shekter Smith, Liane (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)  
**Subject:** FW: KWA and City of Flint

Steve, Mike and Richard,

Please take a look at DWSD's last best offer to the City of Flint and provide your collective perspective to the Director through Liane by the end of the week. Copy me in as well. I'll be out of the office but would like to know if you think this is worth considering.

Thank you for your expedited review.

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, April 16, 2013 6:52 AM  
**To:** Sygo, Jim (DEQ)  
**Subject:** FW: KWA and City of Flint

Jim,

Liane is out of the office today, Can you forward this directly to her staff that worked on this with us.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, April 16, 2013 6:51 AM  
**To:** Sygo, Jim (DEQ); Creal, William (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Anderson, Madhu (DEQ)  
**Subject:** FW: KWA and City of Flint

Bill and Liane,

Can you have your staff's take a quick look at this and let me know today if they think this changes their thoughts and comments to me last week.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

---

**From:** Dillon, Andy (Treasury)  
**Sent:** Monday, April 15, 2013 7:55 PM  
**To:** Wyant, Dan (DEQ); Dennis Muchmore; Roberts, John (GOV)  
**Cc:** Stibitz, Bröm (Treasury); Saxton, Thomas (Treasury)  
**Subject:** Fwd: KWA and City of Flint

FYI

Dan, any thoughts re the attached?

We gave dwsd until today to put best offer on table. Flint is to get back to us tmrw. I want to make sure their expected rejection is made in good faith.

Sent from my iPad

Begin forwarded message

**From:** "Debra Ragland" <[dragland@dwsd.org](mailto:dragland@dwsd.org)>  
**To:** "[ekurtz@cityofflint.com](mailto:ekurtz@cityofflint.com)" <[ekurtz@cityofflint.com](mailto:ekurtz@cityofflint.com)>  
**Cc:** "[jwright@co.genesees.mi.us](mailto:jwright@co.genesees.mi.us)" <[jwright@co.genesees.mi.us](mailto:jwright@co.genesees.mi.us)>, "Dillon, Andy (Treasury)" <[DillonA2@michigan.gov](mailto:DillonA2@michigan.gov)>, "James Fausone" <[fausone@dwsd.org](mailto:fausone@dwsd.org)>, "[orrk@detroitmi.gov](mailto:orrk@detroitmi.gov)" <[orrk@detroitmi.gov](mailto:orrk@detroitmi.gov)>, "Sue McCormick" <[mccormick@dwsd.org](mailto:mccormick@dwsd.org)>  
**Subject:** KWA and City of Flint

Please see attached on behalf of Sue F. McCormick.

Faxed copy forwarded to Mayor Dayne Walling and Jeff Wright.

**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, October 01, 2015 1:43 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Use of SRF to replace lead service lines  
**Attachments:** Eligibility of Lead Service Line Replacement MEMO 2012-2013.pdf

*TD*

Please print.

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, October 01, 2015 1:28 PM  
**To:** Wyant, Dan (DEQ); Sygo, Jim (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ); Butler, Sonya (DEQ); Devereaux, Tracy Jo (DEQ); Thelen, Mary Beth (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ)  
**Subject:** Fw: Use of SRF to replace lead service lines

---

**From:** Butler, Sonya (DEQ)  
**Sent:** Thursday, October 1, 2015 1:14:48 PM  
**To:** Green, Kelly (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ)  
**Subject:** FW: Use of SRF to replace lead service lines

John Barton from Treasury asked for the federal statute regarding lead service line replacement. I asked EPA for the source document. The reply is noted below.

---

**From:** Cossa, Laura [mailto:[rossa.laura@epa.gov](mailto:rossa.laura@epa.gov)]  
**Sent:** Thursday, October 01, 2015 12:48 PM  
**To:** Butler, Sonya (DEQ)  
**Cc:** Barton, John (Treasury); Bielanski, Andrew; Baltazar, Debbie; Crooks, Jennifer; Marquardt, Steve  
**Subject:** RE: Use of SRF to replace lead service lines

*FYI*  
*✓*

Hi Sonya,

Because it is an eligibility question, there is probably no specific regulation to address it, but HQ issued a memo (attached). Although is not dated, it was still draft in 2012, so is probably 2012/2013. We may be able to find a more precise date from HQ. Just FYI, there is a reference on page 2 to a 2003 memo – the link to the 2003 memo is: [http://water.epa.gov/grants\\_funding/dwsrf/upload/2008\\_04\\_10\\_dwsrf\\_memos\\_memo\\_dwsrf\\_policy\\_2003-07-25.pdf](http://water.epa.gov/grants_funding/dwsrf/upload/2008_04_10_dwsrf_memos_memo_dwsrf_policy_2003-07-25.pdf).

I hope this helps.

Please let me know if you have any questions.

Thanks.

Laura

---

**From:** Butler, Sonya (DEQ) [mailto:[BUTLERS2@michigan.gov](mailto:BUTLERS2@michigan.gov)]  
**Sent:** Wednesday, September 30, 2015 12:18 PM  
**To:** Cossa, Laura; Marquardt, Steve

**Cc:** Barton, John (Treasury)  
**Subject:** FW: Use of SRF to replace lead service lines

Laura

Could you tell me where to find the federal law that allows for work to be done on private property (see original note down below)? John Barton from Treasury wants this information and I know you can find it faster than I.

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Monday, September 28, 2015 4:49 PM  
**To:** Pallone, Maggie (DEQ); Busch, Stephen (DEQ); Butler, Sonya (DEQ)  
**Cc:** Wurfel, Brad (DEQ)  
**Subject:** FW: Use of SRF to replace lead service lines

Let's discuss.

Dan Wyant, Director  
Department of Environmental Quality  
517-284-6700 (New Number)

---

**From:** Hedman, Susan [<mailto:hedman.susan@epa.gov>]  
**Sent:** Monday, September 28, 2015 4:36 PM  
**To:** Wyant, Dan (DEQ)  
**Subject:** Use of SRF to replace lead service lines

Hi Dan —

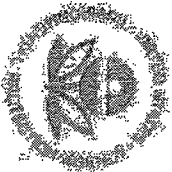
Here's a quick answer to your question about using SRF to replace lead service lines. Under the federal SRF program, SRF funds can be used to replace lead service lines on both public and private property. (We don't know if Michigan rules allow for the use of SRF funding on private property, but presumably you know whether that's the case.) If you have additional questions, your staff can follow up with Steve Marquardt, Chief of the R5 Water Division State and Tribal Program Section. His number is 312-353-3214.

Please keep me posted on the time for the event later this week.

Thanks,

Susan

Susan Hedman  
Region 5 Administrator/Great Lakes National Program Manager  
U.S. Environmental Protection Agency  
77 West Jackson Blvd - 19th Floor  
Chicago, Illinois 60604-3590



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

**MEMORANDUM**

**SUBJECT:** Financing of Replacement of Lead Service Lines on Private Property Under the DWSRF

**FROM:** Joanne Logan  
Attorney-Advisor  
Civil Rights and Financial Law Office  
Office of General Counsel

**THROUGH:** Wendel Askew  
Assistant General Counsel  
Civil Rights and Financial Law Office  
Office of General Counsel

Kep Ritten  
Deputy Associate General Counsel  
Civil Rights and Financial Law Office  
Office of General Counsel

**TO:** Peter Spingarn  
Team Leader  
Drinking Water State Revolving Fund Team  
Office of Ground Water and Drinking Water, Office of Water

**Question Presented:**

You have asked whether the financial assistance from a State's Drinking Water State Revolving Loan Fund can be used to eligible entities to fund projects that involve replacing lead service lines that may be on private property and that connect to private dwellings.

**Brief Answer:**

We believe that lead service line projects, regardless of the ownership of the property on which the pipe is placed, may be funded by a State's DWSRF so long as the loans are made to an eligible entity and all other requirements of the DWSRF are met.

## Analysis

The statute and the regulatory provisions governing the use of State DWSRF funds, though defining which entities may receive funds, do not require the Public Water System to have control over all portions of a project that is funded by the DWSRF. Congress gave EPA's Administrator the clear authority to determine which projects would be eligible under §1452: "Financial assistance... may be used... only for expenditures of a type or category which the Administrator has determined, through guidance, will facilitate compliance with national primary drinking water regulations." PHSA §1452 (a)(2). The only broad statutory limitations on the types of projects that cannot be funded are projects which include monitoring, operation, or maintenance expenditures, or projects for the acquisition of real property unless the purchase is made from a willing seller and the acquisition is integral to the project.

40 CFR §35.3520 (b)(2) sets forth the categories of projects that can be funded by a DWSRF. This provision includes the transmission and distribution of water to be a category of eligible projects. Specifically, the regulation provides examples of such projects to include: "installation or replacement of transmission and distribution pipes to improve water pressure to safe levels or to prevent contamination caused by leaks or breaks in the pipes." See 40 CFR §35.3520 (2)(ii).

Lead pipes can contaminate water at any point, including on its way to a private home. Allowing a public water system to use its funds to replace such pipes is consistent with this allowable category of projects, and is similarly consistent with the overall health protections of the Safe Drinking Water Act. See PHSA 1452 (a)(1)(A). Note that if a Public Water System wishes to purchase and retain an easement so that it maintains control of such infrastructure, that purchase is authorized as well: "Funds shall not be used for real property or interests therein unless the acquisition is integral to the project authorized... and the purchase is from a willing seller." PHSA 1452(a)(2).

This determination that replacement of lead pipes on privately owned property is an eligible project cost so long as it otherwise complies with the PHSA is consistent with prior approved eligible projects, such as water efficiency projects, that do not require all elements of a project to be under the control of a Public Water System. In a Memorandum dated July 25, 2003, then Assistant Administrator for Water, G. Tracy Mehan III informed Water Division Directors in the regions that projects such as the installation or retrofit of plumbing fixtures and appliances, installation of water meters, and implementation of incentive programs to conserve water, such as rebates or conservation rate structures were all eligible projects under the DWSRF. Therefore, so long as the assistance is given to an eligible entity, and the project otherwise meets the requirements of the DWSRF, the project may be funded regardless of ownership or control of the resulting infrastructure.

300

**Thelen, Mary Beth (DEQ)**

---

**Subject:** RDS/GT/VB - KWA & DWSD (Water) Meeting  
**Location:** Governor's SE MI Office

**Start:** Fri 4/19/2013 3:00 PM  
**End:** Fri 4/19/2013 4:30 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** GovCalendar

**Required Attendees:** Hichez, Amy (Treasury); Muchmore, Dennis (GOV); Wisniewski, Wendy (GOV); Rustem, William (GOV); Brader, Valerie (GOV); Tedder, Greg (GOV)

**Optional Attendees:** Clayton, Stacie (GOV); Thelen, Mary Beth (DEQ)

PPI

PPI

**Host:** PPI - SClayton to dial in as Host

**Attendees:**

RDS/GT in person, Val Brader by phone

Mr. Orr by phone

Harvey Hollins by phone or in person

Attending from DWSD: Jim Fausone, Sue McCormick (Director), Nikki Bateson (CFO)

Attending from Flint: Ed Kurtz and Flint Mayor Dayne Walling

Attending from Treasury: Andy Dillon, Amy Hichez

Attending from DEQ: Dan Wyant

George Karmo from Tucker Young Jackson Tull Inc



**Thelen, Mary Beth (DEQ)**

---

**Subject:** RDS/GT/VB - KWA & DWSD (Water) Meeting  
**Location:** Governor's SE MI Office

**Start:** Fri 4/19/2013 5:30 PM  
**End:** Fri 4/19/2013 7:00 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** GOVSecurity2

888-363-4734

9699404

**Host:** 4563 - SClayton to dial in as Host

**Attendees:**

RDS/GT in person, Val Brader by phone

Mr. Orr by phone

Harvey Hollins by phone or in person

Attending from DWSD: Jim Fausone, Sue McCormick (Director), Nikki Bafeson (CFO)

Attending from Flint: Ed Kurtz and Flint Mayor Dayne Walling

Attending from Treasury: Andy Dillon, Amy Hichez

Attending from DEQ: Dan Wyant

George Karmo from Tucker Young Jackson Tull Inc

*Director*  
*This has been*  
*changed to*  
*5:30-7:00*  
*pm.*

*Wrong time*

**Thelen, Mary Beth (DEQ)**

---

**From:** Krisztian, George (DEQ)  
**Sent:** Tuesday, October 06, 2015 5:20 PM  
**To:** Wyant, Dan (DEQ); Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ)  
**Subject:** FW: Filter Distribution Update  
**Attachments:** Water timeline 10.5 and 10.6.docx

FYI

Please forward to anyone I missed that should be included

George

**From:** Dayne Walling [mailto:dwalling@cityofflint.com]  
**Sent:** Tuesday, October 06, 2015 3:57 PM  
**To:** Krisztian, George (DEQ)  
**Subject:** Fwd: Filter Distribution Update

George, I am going to forward you documents that I receive to keep you updated.

----- Forwarded message -----

**From:** Brickey, Tamara <tbrickey@gchd.us>  
**Date:** Tue, Oct 6, 2015 at 3:48 PM  
**Subject:** Filter Distribution Update  
**To:** Kirk Smith <ksmith@flint.org>, Jamie Gaskin <jgaskin@unitedwaygenesee.org>, Howard Croft <heroft@cityofflint.com>, Lreynolds <lrey52@gmail.com>, Dayne Walling <dwalling@cityofflint.com>, Lawrence Reynolds <reynolds@mottchc.org>, Andy Leavitt <aleavitt@senatedems.org>, "Hovey, Amy" <Amy.Hovey@mail.house.gov>, "Valacak, Mark" <MVALACAK@gchd.us>, tony.lasher@redcross.org, Mona Hanna-Attisha <MHanna1@hurleymc.com>, plevine@gcms.org, Melany Gavulic <MGavulic1@hurleymc.com>, neeleyrep34@gmail.com, Natasha Henderson <nhenderson@cityofflint.com>, banerjeea@mottchc.org, "Boyer, Jenifer" <JBoyer@co.genesee.mi.us>, "Swartout, April" <ASWARTOUT@gchd.us>

Hi all,

Please see the attached for the update as of today.

Thanks,

Tamara Brickey, MS, CHES

Public Health Division Director  
Genesee County Health Department  
630 S. Saginaw Street  
Suite 4  
Flint, MI 48502  
(810) 257-3202 Fax: (810) 257-3147  
[tbrickey@gchd.us](mailto:tbrickey@gchd.us)

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**From:** Brickey, Tamara  
**Sent:** Thursday, October 01, 2015 6:39 PM  
**To:** 'Kirk Smith'; Jamie Gaskin; Howard Croft; Lreynolds; Dayne Walling; Lawrence Reynolds; Andy Leavitt; Hovey, Amy; Valacak, Mark; [tony.lasher@redcross.org](mailto:tony.lasher@redcross.org); Mona Hanna-Attisha; [plevine@gcms.org](mailto:plevine@gcms.org); Melany Gavulic; [neeleyrep34@gmail.com](mailto:neeleyrep34@gmail.com); Natasha Henderson; [banerjeea@mottchc.org](mailto:banerjeea@mottchc.org)  
**Subject:** Filter Distribution Update

Hi all,

I would like to provide an update on how today has unfolded and where plans currently stand.

- The University of Michigan-Flint has agreed to be our point of dispensing. They are graciously giving us space and helping us obtain volunteers, as well as helping us with logistical set up, and security/police.
- United Way is having approximately 4,000 water filters delivered via the Home Depot to the University of Michigan-Flint Recreation Center. Hilda McShane (GCHD) is helping to facilitate this with Jamie and the U of M-Flint staff.
- GCHD staff met with U of M-Flint Recreation Center staff today for a walk through. I will be working on a set up map tonight, and providing U of M-Flint with details for our volunteers.

- U of M-Flint has also asked for recommendations on water filters for their campus. We will be sending them the same list shared with the United Way.
- Following the recommendations of this group, GCHD has produced a list of priority groups to receive filters. Please see attached.
- We are still awaiting data from MDHHS to do GIS mapping for our WIC clients.
- GCHD will utilize a list of known WIC clients within the target areas and the city of Flint, and do call outs tomorrow to clients to inform them of the water filters that will be available. We had hoped to reach the clients in the recognized target area first, however, due to media coverage we do not anticipate that it will be possible to limit to that specific area of Flint. We will be limiting to those listed as priority 1-4 on the attached sheet.
- With the urging of U of M-Flint, due to security concerns, filter distribution will begin on **Saturday, October 3 at 10am**. Volunteers and staff will be reporting at 8am.
- 3pm today, Genesee County announced via press conference that there is an official public health emergency declaration.
- If any filters remain after distribution, they will be stored with Mott Children's Health or at GCHD depending on volume.
- If further filters are obtained, assistance from the Red Cross will be necessary.
- 10:30am a press conference announcing the filter distribution and demonstration on how to use them will occur at the University of Michigan-Flint Happenings Room.

That I believe is the run down for today. Thank you to everyone who has provided input and feedback as needed. We are continuing to work with U of M-Flint and all of the partners on logistical needs, and will give further updates as they are available.

Thanks,

**Tamara Brickey, MS, CHES**

Public Health Division Director  
Genesee County Health Department  
630 S. Saginaw Street  
Suite 4  
Flint, MI 48502  
(810) 257-3202 Fax: (810) 257-3147  
[tbrickey@gchd.us](mailto:tbrickey@gchd.us)

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---

**From:** Kirk Smith [<mailto:ksmith@flint.org>]  
**Sent:** Thursday, October 01, 2015 1:08 PM  
**To:** Brickey, Tamara  
**Cc:** Jamie Gaskin; Howard Croft; Lreynolds; Dayne Walling; Lawrence Reynolds; Andy Leavitt; Hovey, Amy; Valacak, Mark; [tony.lasher@redcross.org](mailto:tony.lasher@redcross.org); Mona Hanna-Attisha; [plevine@gcms.org](mailto:plevine@gcms.org); Melany Gavulic; [neeleyrep34@gmail.com](mailto:neeleyrep34@gmail.com); Natasha Henderson; [banerjeea@mottchc.org](mailto:banerjeea@mottchc.org)  
**Subject:** FW: Filter Distribution Planning Brief

Hi Tamara,

I was just speaking with Jamie Gaskin on a few updates. He shared that there was a Health Department meeting you were holding at 2:00 p.m. today (he thought) regarding the developing filter distribution strategy.

Based on what he shared (below) of who he was aware was invited (we were not, and that's fine), I want to confirm you have the relevant data to inform your strategy, e.g. data from Dr. Mona and her research team (GIS mapping), Howard Croft (lead service line detail), Andy Leavitt in Senator Ananich's office, etc. to inform the strategic distribution process. Given the limited number of filters compared to the number of homes in the city, we've had strong consensus that initial resources go to the families and community sites most in need. There is a great deal of information out there to inform the process.

Can you provide an update for those of us who have been removed from the loop yet are still fielding lots of questions and working to secure additional resources for households in the city?

Thank you for your efforts on this important matter.

Kirk Smith, MHSA

President & CEO

Greater Flint Health Coalition

(810) 232-2228

[ksmith@flint.org](mailto:ksmith@flint.org)

---

-----Original Appointment-----

**From:** Brickey, Tamara [<mailto:tbrickey@gchd.us>]

**Sent:** Thursday, October 01, 2015 9:11 AM

**To:** Brickey, Tamara; Valacak, Mark; Swartout, April; Swain, Ann R.; McShane, Hilda; [JBoyer@co.genesee.mi.us](mailto:JBoyer@co.genesee.mi.us); Jamie Gaskin; Henry, James

**Subject:** Filter Distribution Planning Brief

**When:** Thursday, October 01, 2015 7:30 PM-9:00 PM America/New\_York.

**Where:** GCHD Burton Health Clinic G-3373 S. Saginaw St, Burton, Michigan 48529

---

Hi all,

At this meeting GCHD will give information on locations for water filters to be distributed, a draft time line, what our staff are already doing, and needs from partners. I hope you can join us.

Thanks,

Tamara Brickey

--  
Dayne Walling  
Mayor, City of Flint  
City Hall, 1101 S. Saginaw St.  
Flint, MI 48502  
810-766-7346

[mayor@cityofflint.com](mailto:mayor@cityofflint.com)

[www.cityofflint.com](http://www.cityofflint.com)

follow me on twitter at <http://twitter.com/mayorwalling>

**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, October 08, 2015 9:42 AM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Harvey Hollins' E-Mails  
**Attachments:** Flint.pdf; Untitled; CC Meeting Minutes 3-25-2013 (1).doc

Please print all.

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Wednesday, October 07, 2015 5:22 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Shaler, Karen (DEQ)  
**Subject:** Harvey Hollins' E-Mails

Karen from Director's Inbox

**Olszewski, Rosemarie (DEQ)**

---

**From:** Hollins, Harvey (GOV)  
**Sent:** Wednesday, October 07, 2015 5:13 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Muchmore, Dennis (GOV); Agen, Jarrod (GOV)  
**Subject:** Flint.pdf  
**Attachments:** Flint.pdf, ATT00001.htm

Per your request. This is the first of three emails with attachments. It is important to note that council did not take a vote to use Flint river. DWSD terminated the contract in April 2013 after the March 2013 vote which gave Flint one year left to use DWSD. The decision to use Flint river was made April 2014 instead of paying the cost to continue on DWSD until KWA was online.

FILE

D

✓



EM SUBMISSION NO.: 2013EM041

PRESENTED: 3-28-13

ADOPTED: 3-29-13

**BY THE EMERGENCY MANAGER:**

**RESOLUTION TO PURCHASE CAPACITY FROM  
KAREGNONDI WATER AUTHORITY**

The Karegnondi Water Authority (KWA) is a governmental consortium of cities and counties in southeastern Michigan that was created to build a water pipeline that will provide water from Lake Huron to interested communities in Sanilac, Lapeer, and Genesee counties. The incorporating bodies that created the KWA are Sanilac County, Lapeer County, Genesee County, the City of Flint, and the City of Lapeer.

The City of Flint is currently in a year to year contract with the City of Detroit for the purchase of water. A study was conducted that projected that staying with Detroit will cost the region \$2.1 billion over the next 25 years. In contrast, if the region builds its own pipeline, the projected costs are \$1.9 billion over the same period. After the initial 25 year period, the projected costs would be less than 25% of the projected water costs from Detroit.

In order to build the pipeline, the KWA needs commitment from its members regarding the capacity that each member will purchase in the pipeline. The KWA is allowed to withdraw 85 million gallons of water per day. Capacity is available to members in increments of 1 million gallons per day known as units. For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one time fee of \$32,300.00. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount not to exceed \$355.300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00 the buyer has a right to cancel the contract.

The purchase of capacity along with the payment of other costs necessary to operate the pipeline gives the member a right to water for sale to its customers. The buyer has a right to resell capacity and water rights. Each party entering into a capacity contract shall also be entitled to appoint additional board members equal to the party's percentage share of the total capacity under contract.

It is in the long term best interests of the City of Flint to enter into a contract with the KWA to purchase up to eighteen (18) units of capacity.


**IT IS RESOLVED** that City officials are authorized to enter into a contract with KWA to purchase up to eighteen (18) units of capacity.

**IT IS FURTHER RESOLVED** that the City Administrator is authorized to provide KWA information needed to administer the contract and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract.

**APPROVED AS TO FORM:**


**APPROVED AS TO FINANCE:**

  
Peter M. Bade, City Attorney

  
For Gerald Ambrose, Finance Director

**EM DISPOSITION:**

ENACT ✓ FAIL \_\_\_\_\_ DATED 3-29-13

  
Edward L. Kurtz, Emergency Manager

EM SUBMISSION NO.: 2013EM041

PRESENTED: 3-28-13

ADOPTED: 3-29-13

BY THE EMERGENCY MANAGER:

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KAREGNONDI WATER AUTHORITY**

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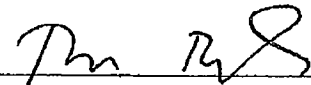
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**APPROVED AS TO FORM:**

**APPROVED AS TO FINANCE:**

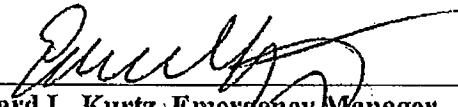
  
Peter M. Bade, City Attorney

  
For Gerald Ambrose, Finance Director

**EM DISPOSITION:**

ENACT ☒ ✓ FAIL ☐ \_\_\_\_\_

DATED 3-29-13

  
Edward L. Kurtz, Emergency Manager

Flint

## Flint City Council approves resolution to buy water from Karegnondi, state approval still needed



[<http://connect.mlive.com/staff/dadams1/index.html>] By Dominic Adams | [dadams5@mlive.com](mailto:dadams5@mlive.com) [<http://connect.mlive.com/staff/dadams1/posts.html>]  
Follow on Twitter [<http://www.twitter.com/dominicadams>]  
on March 25, 2013 at 10:45 PM, updated March 26, 2013 at 1:28 AM

FLINT, MI – Flint is one step closer to getting its water from Lake Huron as part of the Karegnondi Water Authority.

The vote, approved 7-1 at the Flint City Council meeting Monday, March 25

[[http://www.mlive.com/news/flint/index.ssf/2013/03/flint\\_city\\_council\\_again\\_delay.html](http://www.mlive.com/news/flint/index.ssf/2013/03/flint_city_council_again_delay.html)], may have set in motion the end to Flint paying to get its water from Detroit.

Under the proposal, Flint would get 16 million gallons per day of raw water from Lake Huron, pipe it to Flint for treatment and then sell it to customers throughout the city. Another 2 million gallons per day would come from the Flint River and will be treated in Flint.

Mayor Dayne Walling said the Department of Environmental Quality must approve Flint's getting 2 million gallons per day from the Flint River.

Tuesday's meeting followed weeks of discussions and special meetings surrounding the resolution.

"We got there," Councilman Joshua Freeman said. "That's the important thing."

There were more than 50 people at Monday's meeting.

"Going with Karegnondi is the best decision. We have no opinion on the economics of the decision," said Rebecca Fedewa, Flint River Watershed Coalition executive director. "If we start drawing water out of the Flint River, we are at risk of having to start releasing water from our reservoirs."

Genesee County Drain Commissioner Jeff Wright said the decision must still be approved by a county water and waste advisory board. The KWA board will then be reconvened for final approval.

Wright said construction could start in May.

State treasury officials still must approve the city council's move because Flint has an emergency financial manager. All expenditures over \$50,000 must be approved.

Genesee County Drain Commissioner Jeff Wright has said that Flint would pay roughly \$6.4 million annually for water service if it joined the pipeline -- a nearly \$4 million savings on what it pays Detroit for water.

Walling previously said the city would save \$19 million over eight years

[[http://www.mlive.com/news/flint/index.ssf/2013/03/flint\\_city\\_council\\_delays\\_decl.html](http://www.mlive.com/news/flint/index.ssf/2013/03/flint_city_council_delays_decl.html)] by getting water from the KWA.

"It's a historic night in the City of Flint," Walling said. "The savings will be less with the capacity level approved by city council because there will be increased treatment cost for the river water."

He said the DEQ told the city it needed to get 18 million gallons per day or there would have to be additional work done at Flint's water plant.

Flint's water plant and the Flint River is currently the backup for Flint and Genesee County, however, the plant only operates four times per year.

Councilman Bryant Nolden was the lone dissenting vote.

"It was a protest vote," Nolden said. "I knew they had enough votes. I just feel like the Flint River is our best option."

Karegnondi is the regional water authority that includes Genesee, Lapeer and Sanilac counties and the cities of Flint and Lapeer.

Flint is the second municipality, behind Genesee County, to officially decide to purchase raw water through the KWA. Lapeer city officials said they intend to purchase water, but an agreement has been finalized.

Dominic Adams is a reporter for MLive-Flint Journal. Contact him at [dadams5@mlive.com](mailto:dadams5@mlive.com) or 810-241-8803. Follow him on Twitter [<http://www.twitter.com/dominicadams>], Facebook [<http://www.facebook.com/dominic.adams.1865>] or Google+ [<https://plus.google.com/103690672506808729911?rel=author>].



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Here's how that toxic lead gets into Flint water

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## GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

JEFFREY WRIGHT

COMMISSIONER

G-4608 BEECHER ROAD, FLINT, MI 48532

PHONE (810) 732-1590 FAX (810) 732-1474



FOR IMMEDIATE RELEASE

CONTACT: Jeff Wright

March 26, 2013

810-287-1925

**What:** Jeff Wright Statement on Flint City Council Approving Resolution to Join KWA.

**When:** March 26, 2013

**Additional Info:** Jeff Wright, CEO of the KWA, today praised the Flint City Council for voting to approve a resolution to officially have the City of Flint join the KWA and its' water line.

"I have said from the beginning that this decision must be made by Flint's City Council and Mayor," said Wright. "I appreciate the council voting the way they did, but even more than that, I am glad the residents of Flint were able to have their voices heard via their elected officials." The next step in the process will come with the KWA Board executing the contract for the City.

"The most important aspect from the vote is the fact that we as an Authority can move forward knowing Flint's intentions," said Wright.

Despite Emergency Manager Ed Kurtz publicly supporting the project, Wright had made a vote by council a condition of Flint joining the KWA so the residents would have their say.

"There is a basic tenet that government is best when it has local control. We saw that with the council vote. Nobody, whether they live in Flint, Grand Blanc, Davison, Fenton, or anywhere in Genesee County, should have these types of decisions made by people who live outside of their community," said Wright.

At the next Water and Waste Advisory Board meeting a vote will be taken to award a contract for construction of the intake portion of the water line. All bids were submitted to the board at their last meeting for review.



STATE OF MICHIGAN  
DEPARTMENT OF TREASURY  
LANSING

RICK SNYDER  
GOVERNOR

ANDY DILLON  
STATE TREASURER

Mr. Edward Kurtz  
Emergency Manager  
City of Flint  
1101 South Saginaw Street  
Flint, MI 48502

April 11, 2013

Dear Mr. Kurtz:

Thank you for your March 29, 2013 letter, which is attached for reference. As the Emergency Manager for the City of Flint ("Flint" or "City"), you have asked for my concurrence, pursuant to Public Act 436 of 2012, the Local Financial Stability and Choice Act, to authorize a contract in excess of \$50,000.00 not subject to competitive bidding. This request was related to the City entering into an agreement with the Karegnondi Water Authority (KWA) for provision of raw water for the City.

In considering your request, I took note of the following facts in support of Flint joining KWA. First, there is widespread support in the City for this move, including the support of the Mayor, the City Council, and the Emergency Manager. Second, this move will provide a unique opportunity for the City and County to partner on an important project, which will hopefully lead to future regional collaboration. Third, the Department of Environmental Quality is supportive of the City participating in the KWA project. Finally, your representations that this deal will lead to substantial savings for the City over the coming decades, savings that are desperately needed to help with the turnaround of the City of Flint.

It is my understanding that the Detroit Water and Sewer Department is making a final best offer to Genesee County and the City of Flint next Monday, April 15, 2013. As such, this approval will be effective at 5 pm on April 16, 2013 after receiving written notice from the City that either no such offer was presented to the county and the City or that an offer was received and was rejected in good faith based upon specified objections.

For the reasons described above and subject to the conditions set forth herein, pursuant to Section 12 (3) of PA 436 of 2012, I am authorizing you to proceed with adopting the resolution and entering into a contract with KWA.

Sincerely,

  
Andy Dillon  
State Treasurer



Flint

# Flint council supports buying water from Lake Huron through KWA



[<http://connect.mlive.com/staff/dadams1/index.html>] By Dominic Adams | [dadams5@mlive.com](mailto:dadams5@mlive.com) [<http://connect.mlive.com/staff/dadams1/posts.html>]  
Follow on Twitter [<http://www.twitter.com/dominicadams>]  
on March 25, 2013 at 7:17 PM, updated March 26, 2013 at 7:43 AM

FLINT, MI -- Flint residents may soon get their water from Lake Huron.

The Flint City Council voted 7-1 to get 16 million gallons per day from the Karegnondi Water Authority.

"This is about compromise," said Councilman Sheldon Neeley.

Neeley got support from Councilman Joshua Freeman, after the two were previously at odds about the amount the city should withdraw from Lake Huron.

Councilman Bryant Nolden was the lone "no" vote.

"It was a protest vote," Nolden said. "I just feel like the Flint River is our best option."

Genesee County Drain Commissioner said construction of the pipeline could start in May.

The city currently pays to get its water from Detroit.

State treasury officials still must approve the city council's move because Flint has an emergency financial manager. All expenditures over \$50,000 must be approved.

*Dominic Adams is a reporter for MLive-Flint Journal. Contact him at [dadams5@mlive.com](mailto:dadams5@mlive.com) or 810-241-8803. Follow him on Twitter [<http://www.twitter.com/dominicadams>], Facebook [<http://www.facebook.com/dominic.adams.1865>] or Google+ [<https://plus.google.com/103690672506808729911?rel=author>].*

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**Olszewski, Rosemarie (DEQ)**

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**From:** Hollins, Harvey (GOV)  
**Sent:** Wednesday, October 07, 2015 5:14 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Muchmore, Dennis (GOV); Agen, Jarrod (GOV)  
**Attachments:** KWA Contract (amended) 130165.2.pdf; ATT00001.txt

Resolution: 130165.2

Presented: 3-11-13

Adopted: 3-25-13

**AMENDED RESOLUTION TO PURCHASE CAPACITY  
FROM KAREGNONDI WATER AUTHORITY**

**BY THE MAYOR:**

The Karegnondi Water Authority (KWA) is a governmental consortium of cities and counties in southeastern Michigan that was created to build a water pipeline that will provide water from Lake Huron to interested communities in Sanilac, Lapeer, and Genesee counties. The incorporating bodies that created the KWA are Sanilac County, Lapeer County, Genesee County, the City of Flint, and the City of Lapeer.

The City of Flint is currently in a year to year contract with the City of Detroit for the purchase of water. A study was conducted that projected that staying with Detroit will cost the region \$2.1 billion over the next 25 years. In contrast, if the region builds its own pipeline, the projected costs are \$1.9 billion over the same period. After the initial 25 year period, the projected costs would be less than 25% of the projected water costs from Detroit.

In order to build the pipeline, the KWA needs commitment from its members regarding the capacity that each member will purchase in the pipeline. The KWA is allowed to withdraw 85 million gallons of water per day. Capacity is available to members in increments of 1 million gallons per day known as units. For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one time fee of \$32,300.00. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount not to exceed \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00 the buyer has a right to cancel the contract.

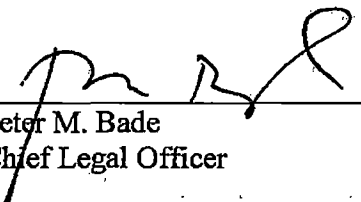
The purchase of capacity along with the payment of other costs necessary to operate the pipeline gives the member a right to water for sale to its customers. The buyer has a right to resell capacity and water rights. Each party entering into a capacity contract shall also be entitled to appoint additional board members equal to the party's percentage share of the total capacity under contract.

The City of Flint has decided that it is in its long term best interests to enter into a contract with the KWA to purchase SIXTEEN (16) units of capacity, plus TWO (2) units from the Flint River.

**IT IS RESOLVED** that City officials are authorized to enter into a contract with KWA to purchase SIXTEEN (16) units of capacity, plus TWO (2) units from the Flint River.

**IT IS FURTHER RESOLVED** that the City Administrator is authorized to provide KWA information needed to administer the contract and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract.

APPROVED AS TO FORM:

  
\_\_\_\_\_  
Peter M. Bade  
Chief Legal Officer

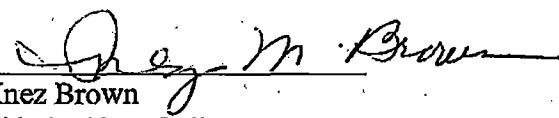
APPROVED AS TO FINANCE:

\_\_\_\_\_  
Gerald Ambrose  
Finance Director

APPROVED BY MAYOR:

\_\_\_\_\_  
Dayne Walling  
Mayor

APPROVED BY CITY COUNCIL  
ON: March 25, 2013

  
\_\_\_\_\_  
Inez Brown  
Clerk, City of Flint

APPROVED BY  
CITY COUNCIL

MAR 25 2013

**Olszewski, Rosemarie (DEQ)**

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**From:** Hollins, Harvey (GOV)  
**Sent:** Wednesday, October 07, 2015 5:14 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Muchmore, Dennis (GOV); Agen, Jarrod (GOV)  
**Subject:** CC Meeting Minutes 3-25-2013 (1).doc  
**Attachments:** CC Meeting Minutes 3-25-2013 (1).doc; ATT00001.txt

# **City of Flint, Michigan**

*Third Floor, City Hall  
1101 S. Saginaw Street  
Flint, Michigan 48502  
[www.cityofflint.com](http://www.cityofflint.com)*



## **Meeting Minutes - Draft**

**Monday, March 25, 2013**

**5:33 PM**

**Agenda amended to include Board of Hospital Managers appointments**

**Council Chambers**

### **CITY COUNCIL**

**Scott Kincaid, President, Ward 9  
Bryant W. Nolden, Vice President, Ward 3**

<b>Claudia Croom, Ward 1</b>	<b>Jacqueline Poplar, Ward 2</b>
<b>Joshua M. Freeman, Ward 4</b>	<b>Bernard Lawler, Ward 5</b>
<b>Sheldon A. Neeley, Ward 6</b>	<b>Dale K. Weighill, Ward 7</b>
<b>Michael J. Sarginson, Ward 8</b>	

**Inez M. Brown, City Clerk**

## CALL TO ORDER

*President Scott Kincaid called the meeting to order at 5:33 p.m.*

## ROLL CALL

*Councilperson Michael Sarginson arrived at 5:37 p.m.*

**Present:** Councilperson: Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, Kincaid, Councilperson Weighill and Councilperson Croom

## PLEDGE OF ALLEGIANCE

*Councilperson Sheldon Neeley led the Pledge of Allegiance.*

## SPECIAL ORDER

**130217** Special Order/Information & Discussion/Karegnondi Water Authority (KWA)

A Special Order as requested by Council President Scott Kincaid to continue discussion and review of information on the Karegnondi Water Authority (KWA).

**Presented**

## PETITIONS AND UNOFFICIAL COMMUNICATIONS

**130193** Change to Digital/All Limited Basic Service Channels/Comcast Cablevision

Communication dated March 6, 2013, from Gerald W. Smith, Government Affairs Manager, Comcast, to Flint City Clerk, re: On or shortly after April 9, 2013, Comcast will convert all Limited Basic service channels -- including Public, Government and Educational Access (PEG) channels to digital format, and will provide customers with digital equipment.

**This matter was Placed on File. The motion carried.**

**130199** Certified Letter/Loyst Fletcher, Jr. & Associates

Communication received from Loyst Fletcher, Jr. to Chief Legal Officer, re: He questions the tax-exempt status of Word of Life Christian Church, which received a tax bill from the city.

**This matter was Placed on File. The motion carried.**

**130200** Local Approval Notice/Michigan Liquor Control Commission (MLCC)/Time Square/Ward 3

Local Approval Notice dated March 14, 2013, from MLCC to Flint City Clerk, re: The MLCC has received a request to transfer all stock in 2012 Class C license with Sunday Sales Permit (PM) and Dance Permit, located at 4522 N. Saginaw,

Flint, Michigan, 48505, Genesee County, held by the estate of Myra Seals, Inc., 1028 Cora Dr., Flint, MI 48532, to Carisa Mays Bishop, Personal Representative. [NOTE: Approval order enclosed.]

**This matter was Placed on File. The motion carried.**

**130202**

Local Approval Notice/Michigan Liquor Control Commission (MLCC)/D & R Market, Inc./Ward 6

Local Approval Notice dated March 6, 2013, and received March 15, 2013, from MLCC to Flint City Clerk, re: The MLCC has received an application from 2 AAR, LLC, requesting to Transfer Ownership of a Specially Designated Distributor (SDD) and Specially Designated Merchant (SDM) licensed business with Sunday Sales permit (PM) and Direct Connection-I to D & R Market, Inc., located at 1402-1404 N. Chevrolet, Flint, Michigan, 48504, Genesee County, from 2 AAR, LLC, 3079 Shattuck Arms Blvd., Apt. 5, Saginaw, MI 48603. [NOTE: The application was cancelled pursuant to a request from an attorney.]

**This matter was Placed on File. The motion carried.**

**130204**

Changes/Cable Channel Lineup/Comcast Cablevision

Communication dated March 18, 2013, from Gerald W. Smith, Government Affairs Manager, Comcast, to Flint City Clerk, re: effective on or about May 22, 2013, Fox Business Network/Fox Business Network HD (ch. 06/243) will from the Digital Preferred Service to the Digital Starter Service.

**This matter was Placed on File. The motion carried.**

**130205**

Media Alert/Flint Public Art Project/Announcement of Design Winner

Media Alert received via e-mail on March 19, 2013, from the American Institute of Architects (AIA), re: The Flint Public Art Project and the Flint Chapter of the AIA will announce the winner of the \$25,000.00 grand prize in the inaugural Flat Lot competition to design and build a temporary summer pavilion on Flint's central downtown parking lot at 9:30 a.m. Thursday, March 21, 2013, at the John Gazall & Associates, Mott Building, 503 S. Saginaw Street, Flint.

**This matter was Placed on File. The motion carried.**

**130207**

Damage Claims

MAYFIELD, LINDA, 2518 Walter Street, Flint, MI (WARD 2)  
LANE, WILLIE C., 3130 Concord Street, Flint, MI (WARD 6)

**This matter was Placed on File. The motion carried.**

## **COMMUNICATIONS FROM CITY OFFICIALS**

**130194**

Press Release/City of Flint/Hiring of New Police Officers/Recruitment of Others

Press Release dated March 11, 2013, from Jason Lorenz, City of Flint Public



Information Officer, re: The City of Flint has seven new police officers on the job from the public safety millage passed last November by voters. The city's next step is to hold a recruitment drive by working with a local college, which will set up a Police Academy when the city has gathered sufficient interest from its efforts.

**This matter was Placed on File. The motion carried.**

- 130195** Press Release/City of Flint/Sunday Sales of Alcohol Before Noon Not Permitted on St. Patrick's Day

Press Release dated March 12, 2013, from Jason Lorenz, City of Flint Public Information Officer, re: The City of Flint will not be able to permit Sunday alcohol sales before noon this Sunday, March 17, St. Patrick's Day. While the city adopted a resolution to allow a one-time exception to the Sunday morning alcohol ban, the Michigan Liquor Control Commission has taken the position that the city cannot create a one-day exemption.

**This matter was Placed on File. The motion carried.**

- 130196** Flint City Council/Public Notice/Special City Council Meeting/March 18, 2013

Public Notice posted March 14, 2013, re: The Flint City Council will hold a Special City Council Meeting, followed by a Finance Committee Meeting, at 5:30 p.m. Monday, March 18, 2013, in the City Council Chambers, 3rd Floor, City Hall, to consider a contract with the Karegnondi Water Authority (KWA).

**This matter was Placed on File. The motion carried.**

- 130201** Emergency Financial Manager (EFM) Order #10/Grant Applications

Order #10 issued by Emergency Financial Manager on March 15, 2013, "Grant Applications," re: "all city officials, department heads, division heads and employees shall adhere to ...requirements regarding the approval of any and all grant applications on behalf of the City of Flint or grant applications submitted by others which in any way involves the financial, programmatic or personnel support by the City of Flint." The five requirements, including the stipulation that only the Emergency Financial Manager or City Administrator are authorized to accept grants on behalf of the city, are included in the order.

**This matter was Placed on File. The motion carried.**

- 130203** Press Release/City of Flint/Flint Lifelines/Meeting Announcement

Press Release dated March 16, 2013, from Jason Lorenz, City of Flint Public Information Officer, re: Flint Lifelines, formerly CeaseFire Flint, will hold community meetings on the fourth Thursday of each month, beginning at 1 p.m. Thursday, March 28, 2013 at Flint Northwestern High School. The meetings are open to the public.

**This matter was Placed on File. The motion carried.**

**130206** Flint City Council/Public Notice/Finance Committee Meeting/March 20, 2013

Public Notice posted March 19, 2013, re: The Flint City Council will hold a Finance Committee Meeting at 5:30 p.m. Wednesday, March 20, 2013, in the City Council Committee Room, 3rd Floor, City Hall.

**This matter was Placed on File. The motion carried.**

**130208** Flint City Council/Public Notice/Special Affairs Committee Meeting/March 25, 2013

Public Notice posted March 22, 2013, re: The Flint City Council will hold a Special Affairs Committee Meeting at 5 p.m. Monday, March 25, 2013, in the City Council Committee Room, 3rd Floor, City Hall. A regular City Council meeting will immediately follow in the Council Chambers.

**This matter was Placed on File. The motion carried.**

**130209** Traffic Engineering/Note for Bulletin/Street-Sidewalk-Lane Closures

Notes for Bulletin (3) dated February/March 2013, for street, sidewalk, or lane closures, re: (1) Harrison Street, Saginaw Street and Second Avenue (cable failure-March 11-March 20); (2) First Street, Harrison Street, Wallenberg, Kearsley, Crapo, Horrigan, and Harrison (St. Patrick's Day Pot O' Gold 4-Mil Run/Walk-March 17); and (3) Chevrolet Avenue (University Corner Grand Opening-March 22).

**This matter was Placed on File. The motion carried.**

**Passed The Consent Agenda**

**A motion was made. The motion carried.**

**PUBLIC SPEAKERS****ROLL CALL**

*Councilperson Dale Weighill left at approximately 7 p.m.*

**Present:** Councilperson: Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, Kincaid and Councilperson Croom

**Absent:** Councilperson: Councilperson Weighill

**APPOINTMENTS****130169.1** Amendment/Reappointment/Zoning Board of Appeals/Christine Monk (Ward 6)

Amended resolution resolving that the Flint City Council recommends the reappointment of Christine Monk (821 Frank Street, Flint MI 48504 - Ward 6), to the Zoning Board of Appeals for a three-year term, commencing September

1, 2011, and expiring September 1, 2014. [By way of background, Ms. Monk's term on the Zoning Board of Appeals expired in September 2011, but she has continued since that time to serve.] [Resolution amended to fix typographical error in first paragraph of resolution from "Board of Review" to "Zoning Board of Appeals."]

**Sponsors:** Sheldon A. Neeley

**A motion was made by Councilperson Neeley, seconded by Councilperson Freeman, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130211**

**Appointment/Zoning Board of Appeals/Chris Zuwala (Ward 4)**

Resolution resolving that the Flint City Council recommends the appointment of Chris Zuwala (3510 Whittier Avenue, Flint MI 48506 - Ward 4) to the Zoning Board of Appeals for a three-year term, expiring September 1, 2013. [NOTE: By way of background, Gloria Kelly's term as the 4th Ward representative expired in September 2007, but she continued to serve until resigning in January 2013.]

**Sponsors:** Joshua M. Freeman

**A motion was made by Councilperson Freeman, seconded by Councilperson Poplar, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130212**

**Reappointment/Zoning Board of Appeals/Birdie V. Brooks (Ward 5)**

Resolution resolving that the Flint City Council recommends the reappointment of Birdie V. Brooks (1307 Columbia Lane, Flint MI 48503 - Ward 5), to the Zoning Board of Appeals for the remainder of a three-year term, expiring September 1, 2014. [By way of background, Ms. Brook's term on the Zoning Board of Appeals expired in September 2011, but she has continued since that time to serve.]

**Sponsors:** Bernard Lawler

**A motion was made by Councilperson Lawler, seconded by Councilperson Neeley, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130213**

Resolution resolving that the Flint City Council recommends the reappointment of Marcia Braden (984 Barney Avenue, Flint MI 48503 - Ward 8), to the Zoning Board of Appeals for the remainder of a three-year term, expiring September 1, 2014. [By way of background, Ms. Braden's term on the Zoning Board of Appeals expired in September 2011, but she has continued since that time to serve.]

**Sponsors:** Michael J. Sarginson

**A motion was made by Councilperson Sarginson, seconded by Councilperson Freeman, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130214**

Reappointment/Zoning Board of Appeals/David C. Veasley (Ward 9)

Resolution resolving that the Flint City Council recommends the reappointment of David C. Veasley (2618 Pinetree Drive, Flint MI 48507 - Ward 9), to the Zoning Board of Appeals for the remainder of a three-year term, expiring September 1, 2015. [By way of background, Mr. Veasley's term on the Zoning Board of Appeals expired in September 2009, but he has continued since that time to serve.]

**Sponsors:** Scott Kincaid

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130215**

Appointment/Genesee County Land Bank Citizens' Advisory Council/Anthony Tucker (Ward 4)

Resolution resolving that the Flint City Council recommends the appointment of Anthony Tucker (2960 Henry Street, Flint MI 48506 - Ward 4) to the Genesee County Land Bank Citizens' Advisory Council for the remainder of a three-year term, expiring in January 2016. [NOTE: By way of background, Dan Anderson's term as the 4th Ward representative expired in January 2013.]

**Sponsors:** Joshua M. Freeman

**A motion was made by Councilperson Freeman, seconded by Councilperson Poplar, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130218

Reappointment/Hurley Board of Hospital Managers/Philip W. Shaltz

Resolution resolving that the Flint City Council approves the reappointment of Philip W. Shaltz (14144 Moffet Drive, Fenton, MI 48430) to an additional five-year term on the (Hurley) Board of Hospital Managers, with such term to commence May 1, 2013, and expire April 30, 2018.

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130219

Appointment/Hurley Board of Hospital Managers/Delrico Loyd

Resolution resolving that the Flint City Council approves the appointment of Delrico Loyd (2641 Westwood Parkway, Flint, MI 48507) to a five-year term on the (Hurley) Board of Hospital Managers, with such term to commence May 1, 2013, and expire April 30, 2018. [By way of background, Carl E. Mason was appointed in June 2008; his term expires April 30, 2013.]

**Approved**

**Substituted**

**A motion was made by Councilperson Neeley, seconded by Councilperson Lawler, that this matter be POSTPONED for March 27, 2013. The motion failed by the following vote:**

**Aye:** 3 - Councilperson Lawler, Councilperson Neeley and Councilperson Sarginson

**No:** 5 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**Substituted**

**A motion was made by Vice President Nolden, seconded by Councilperson Freeman, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 5 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, President Kincaid and Councilperson Croom

**No:** 3 - Councilperson Lawler, Councilperson Neeley and Councilperson Sarginson

**Absent:** 1 - Councilperson Weighill

130220

Appointment/Hurley Board of Hospital Managers/Donna Poplar

Resolution resolving that the Flint City Council approves the appointment of Donna Poplar (5277 Kimberly Woods Circle, Flint, MI 48504) to a five-year term

on the (Hurley) Board of Hospital Managers, with such term to commence May 1, 2013, and expire April 30, 2018. [By way of background, Frances Gilcreast was appointed in August 2008; her term expires April 30, 2013.]

**Approved**

**Substituted**

**A motion was made by Councilperson Lawler, seconded by Councilperson Neeley, that this matter be POSTPONED for March 26, 2013. The motion carried by the following vote:**

**Aye:** 7 - Councilperson Poplar, Vice President Nolden, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**No:** 1 - Councilperson Freeman

**Absent:** 1 - Councilperson Weighill

## RESOLUTIONS

### **130165.1** Amended Resolution/Contract/City of Flint/Karegnondi Water Authority (KWA)

Amended resolution resolving that city officials are authorized to enter into a contract with Karegnondi Water Authority (KWA) to purchase fifteen (15) units of capacity, AND, resolving that the City Administrator is authorized to provide KWA information needed to administer the contract, and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract. [NOTE: For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one-time fee of \$32,300. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount NOT-TO-EXCEED \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00, the buyer has a right to cancel the contract. Over the next 25 years, it is expected that continuing with Detroit will cost the region \$2.1 billion, compared to \$1.9 billion with a pipeline.] [NOTE: Contract not included.] [NOTE: Resolution amended from 18 to 15 units of capacity.]

**A motion was made by Councilperson Neeley, seconded by Councilperson Freeman, that this matter be Amended. The motion carried by the following vote:**

**Aye:** 5 - Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley and Councilperson Sarginson

**No:** 3 - Councilperson Poplar, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

### **130165.2** Amended Resolution/Contract/City of Flint/Karegnondi Water Authority (KWA)

Amended resolution resolving that city officials are authorized to enter into a contract with Karegnondi Water Authority (KWA) to purchase sixteen (16) units

of capacity, AND, resolving that the City Administrator is authorized to provide KWA information needed to administer the contract, and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract. [NOTE: For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one-time fee of \$32,300. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount NOT-TO-EXCEED \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00, the buyer has a right to cancel the contract. Over the next 25 years, it is expected that continuing with Detroit will cost the region \$2.1 billion, compared to \$1.9 billion with a pipeline.] [NOTE: Contract not included.] [NOTE: Resolution amended from 15 to 16 units of capacity.]

**A motion was made by Councilperson Neeley, seconded by Councilperson Freeman, that this matter be Adopted. The motion carried by the following vote:**

**Aye:** 7 - Councilperson Poplar, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**No:** 1 - Vice President Nolden

**Absent:** 1 - Councilperson Weighill

**130216** Approval/The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint

Resolution that the City of Flint hereby approves and The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint, attached hereto. [NOTE: The City of Flint created the DDA, in accordance with Public Act 197 of 1975, as amended, and approved The Rules Governing the DDA in 1977. Public Act 197 has been amended and revised at various times since then, which required the proposed changes.] [NOTE: The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint is attached.]

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Amended. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130216.1** Amended Resolution/Approval/The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint

Amended resolution that the City of Flint hereby approves and The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint, attached hereto. [NOTE: The City of Flint created the DDA, in accordance with Public Act 197 of 1975, as amended, and approved The Rules Governing the DDA in 1977. Public Act 197 has been

amended and revised at various times since then, which required the proposed changes.] [NOTE: The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint is attached.] [Resolution amended for changes to rules.]

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Adopted. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

## **RESOLUTIONS - MAY BE REFERRED FROM S.A.**

### **130210 Resolution/City Council/Mayor Dayne Walling/Request for Appointment of Transition Advisory Board**

Resolution resolving that Mayor Dayne Walling and the Flint City Council request and recommend to Gov. Rick Snyder that a receivership transition advisory board be appointed for the City of Flint under Public Act 436 no later than July 1, 2013. [NOTE: On December 1, 2011, Gov. Snyder appointed Michael K. Brown as Emergency Manager under Public Act 4 for the City of Flint, due in part to a consistent deficit in the general fund, the decline in pooled cash, budget issues and unfunded liabilities for post-employment benefits. Due to the suspension and subsequent repeal of Public Act 4, Gov. Snyder appointed Edward J. Kurtz as Emergency Financial Manager under Public Act 72 for the City of Flint, effective August 9, 2012. Both the Emergency Manager and the subsequently appointed Emergency Financial Manager were authorized by virtue of their appointment to "act for and in the place and stead of the governing body and the office of chief administrative officer of the City of Flint." On March 28, 2013, Public Act 436 will become effective and provides that an emergency financial manager appointed and serving under state law immediately prior to the effective date shall continue to serve as an emergency manager under Public Act 436. As an alternative to continuation of an emergency manager, and if the financial emergency has been rectified, Public Act 436 authorizes the governor to appoint a receivership transition advisory board, which serves at the pleasure of the governor and monitors the affairs of the local government until the receivership is terminated.]

*No vote was taken on this amendment.*

#### **Amended**

### **130210.1 Amended Resolution/City Council/Mayor Dayne Walling/Request for Appointment of Transition Advisory Board**

Amended resolution resolving that Mayor Dayne Walling and the Flint City Council request and recommend to Gov. Rick Snyder that a receivership transition advisory board be appointed for the City of Flint under Public Act 436 no later than July 1, 2013. [NOTE: On December 1, 2011, Gov. Snyder appointed Michael K. Brown as Emergency Manager under Public Act 4 for the



City of Flint, due in part to a consistent deficit in the general fund, the decline in pooled cash, budget issues and unfunded liabilities for post-employment benefits. Due to the suspension and subsequent repeal of Public Act 4, Gov. Snyder appointed Edward J. Kurtz as Emergency Financial Manager under Public Act 72 for the City of Flint, effective August 9, 2012. Both the Emergency Manager and the subsequently appointed Emergency Financial Manager were authorized by virtue of their appointment to "act for and in the place and stead of the governing body and the office of chief administrative officer of the City of Flint." On March 28, 2013, Public Act 436 will become effective and provides that an emergency financial manager appointed and serving under state law immediately prior to the effective date shall continue to serve as an emergency manager under Public Act 436. As an alternative to continuation of an emergency manager, and if the financial emergency has been rectified, Public Act 436 authorizes the governor to appoint a receivership transition advisory board, which serves at the pleasure of the governor and monitors the affairs of the local government until the receivership is terminated.] [Six-page resolution amended for changes proposed by City Council, City Clerk and Mayor Dayne Walling.]

**A motion was made by Councilperson Freeman, seconded by Councilperson Poplar, that this matter be Adopted. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

## **MEETING SCHEDULE**

## **ADDITIONAL COUNCIL DISCUSSION**

## **ADJOURNMENT**

*Having no further business, Council President Scott Kincaid adjourned the meeting at 8:59 p.m.*

*Respectfully transcribed and submitted,*

*Janell Johnson. Administrative Secretary to City Council*

**Olszewski, Rosemarie (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, April 25, 2013 9:58 AM  
**To:** Olszewski, Rosemarie (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: DWSD Proposal  
**Attachments:** Flint04.23.13proposalfinal\_(1)\_\_\_Signed[2].pdf; ATT00001.htm; Specification\_Sheet\_for\_Evaluating\_Water\_Service\_Options\_to.doc; ATT00002.htm; EXH 1.pdf; ATT00003.htm; EXH 3.pdf; ATT00004.htm; EXH 2.pdf; ATT00005.htm

Please print for the Director (if not too long -- long ones just do a few sheets). And please keep confidential. Thanks.

Mbt

Mary Beth Thelen  
Executive Management Assistant to the Director  
Department of Environmental Quality  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)  
517-373-7917 or 517-241-7390

**From:** Dillon, Andy (Treasury)  
**Sent:** Wednesday, April 24, 2013 8:48 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Slibitz, Brom (Treasury); Tedder, Greg (GOV); Saxton, Thomas (Treasury)  
**Subject:** Fwd: DWSD Proposal

FYI. Thanks for all of your help on this.

Sent from my iPad

Begin forwarded message:

**From:** "Debra Ragland" <[dragland@dwsd.org](mailto:dragland@dwsd.org)>  
**To:** "ekurtz@cityofflint.com" <[ekurtz@cityofflint.com](mailto:ekurtz@cityofflint.com)>  
**Cc:** "James Fausone" <[jfausone@fb-firm.com](mailto:jfausone@fb-firm.com)>, "orrk" <[orrk@detroitmi.gov](mailto:orrk@detroitmi.gov)>, "Dillon, Andy (Treasury)" <[DillonA2@michigan.gov](mailto:DillonA2@michigan.gov)>  
**Subject:** Fwd: DWSD Proposal

This email is being sent on behalf of Sue McCormick - Director, Detroit Water and Sewerage Department.

Please replace prior email with this one.

**From:** "Sue McCormick" <[mccormick@dwsd.org](mailto:mccormick@dwsd.org)>  
**To:** "Ed Kurtz" <[ekurtz@cityofflint.com](mailto:ekurtz@cityofflint.com)>

FYI -  
cc Jim S  
cc Bill C  
cc Steve B.  
D

orig mbt file

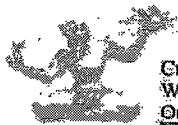
Cc: "Jim Fausone" <JFausone@fb-firm.com>, "orrk" <orrk@detroitmi.gov>, "dillona" <dillona@michigan.gov>  
Sent: Wednesday, April 24, 2013 8:15:18 AM  
Subject: DWSD Proposal

Good morning Mr. Kurtz,

Please find attached DWSD's proposal for continued service to Flint and Genesee County. Within the hour I will also send a power point file that provides a summary level presentation of the proposal.  
I look forward to answering any questions you may have and supporting the conversation between you and Mr. Orr over the next few days.

Sue

Sue F. McCormick, Director  
Detroit Water and Sewerage Department  
735 Randolph, Room 506  
Detroit, Michigan 48226  
Office (313)224-4701  
Fax (313)224-6067  
[McCormic@dwsd.org](mailto:McCormic@dwsd.org)



CITY OF DETROIT  
WATER AND SEWERAGE DEPARTMENT  
OFFICE OF THE DIRECTOR

735 RANDOLPH STREET  
DETROIT, MICHIGAN 48226-2830  
WWW.DETROITMI.GOV

April 24, 2013

Ed Kurtz, Emergency Manager  
City of Flint  
1101 South Saginaw Street  
Flint, Michigan

Dear Mr. Kurtz,

I am pleased to offer this Water Supply proposal for continued long-term water supply service to the City of Flint and Genesee County. DWSD is committed to becoming the provider of choice for Water service in Southeast Michigan and looks forward to the opportunity to partner with the City of Flint/Genesee County as the region moves forward. The proposal herein offers Flint the immediate opportunity for a 45% reduction in the cost of water supply saves the Flint/Genesee region over \$900 million dollars as compared to the KWA alternative over the 30 year contract period.

On December 20, 1965, the Cities of Detroit and Flint entered into a Water Service Agreement (Agreement) for the City of Detroit Water & Sewerage Department (DWSD) to provide treated water to Flint and for Flint to provide DWSD water to other areas of Genesee County. That Agreement had a 35-year minimum and an indefinite maximum term and is currently in effect. There has been one Amendment to that Agreement dated July 18<sup>th</sup>, 1990. That amendment addressed a Flint request to reduce the minimum consumption requirement in the agreement by changing "Article 8 (A and B)". This amendment resulted in significantly lower costs to Flint. All other provisions of the Agreement remained unchanged. For over a decade the cities of Detroit and Flint have been in discussions for a successor Water Service Agreement to replace the Agreement currently in place. During the course of those discussions many different service alternatives have been considered but the cities have been unable to agree on terms that would allow their current Agreement to be replaced by a successor water service agreement.

In recent months, via a process largely governed by the State of Michigan, DWSD has proposed a number of alternative approaches for long-term water supply to the Flint/Genesee region. During a meeting with the State on April 19<sup>th</sup> a process and schedule was outlined that provided DWSD the opportunity to deliver a final proposal to Flint for continued service to the Flint/Genesee region. The proposal herein provides a public/public partnership approach in response to the water service requirements set forth by Flint / Genesee County / KWA as of April 22, 2013 (attached).

The following discussion and exhibits are designed to present the highlights of our submittal, and specifically respond to the points set forth in the request. In summary, our proposal reflects a public/public partnership approach with Flint that is designed to launch a cooperative arrangement toward solving water supply challenges in the Flint/Genesee region in a manner that best meets the interests of Flint and is equitable across the DWSD service area. Our proposed approach is responsive to the specification and has direct benefits to Flint/Genesee. Notably:

- Provides Flint, as partner with a capacity share in the Lake Huron Water Treatment Plant, the advantage of treatment costs calculated from a facility that has a lower cost of production compared to DWSD's other treatment plants; this capacity obligation is secured by a contractual obligation to successors and assigns;
- Effectively negates the distance and elevation factor that exists in the current rate structure to Flint, calculating transmission costs based on the line from the Lake Huron plant to the Baxter/Potter connection;
- Provides redundant (back-up) water supply at the Imlay City Pump Station and reflects fair recognition that Flint will provide a level of "reliability" on its own that DWSD currently provides to other wholesale customers, through construction and ownership of redundant transmission from the Imlay pump station West to Baxter/Potter or other point of connection as determined by Flint further maximizing Flint's interest in ownership of assets.

#### Highlights of our proposal:

Contract Structure – It is proposed that Flint would enter into a public/public partnership with DWSD that would reflect more input into and control over system investments and cost variables. The contract between Flint and DWSD would include "purchased capacity rights" in the "Lake Huron System" (defined below) based on the specific demands in an Exhibit B to the new contract, presumably the demands would be those included in the specifications attached. This is consistent in nature to DWSD's model contract that has been in place since 2008.

Revenue Requirement Responsibility – Limited to the costs associated with the "Lake Huron System", which includes the Lake Huron Water Treatment Plant and Intake and the transmission, pumping and storage facilities between the Lake Huron Plant and the delivery to Flint at the Baxter/Potter connection. Baseline revenue requirement data (including operating budget, rate of return, etc.) are identical to those developed for all other wholesale customers. No other DWSD costs will be allocable to Flint.

Proposed Rate Structure – Revenue requirements for the Lake Huron System will be recovered through a fixed monthly charge to recover allocated capital revenue requirements, plus a commodity charge to recover annual operating expenses. A separate fixed monthly charge is recovers the allocated "emergency standby" capital revenue requirements.

Redundancy Solution – Emergency backup supply is provided to the Imlay pump station, with the associated standby charge. A second transmission water main from the Imlay City Pumping Station west to either the current connection at Baxter/Potter roads or to another location to be determined by Flint, as necessary to meet the full redundancy requirements specified is assumed for comparison purposes. To maximize Flint's interest in ownership, it is proposed that this line will be constructed by Flint or KWA, and owned and operated by Flint or KWA. No costs associated with this transmission line are included in the proposed rate structure summarized in Exhibit 1. For the purposes of comparison of alternatives we have included an estimated annual revenue requirement for constructing such line, and these costs are reflected in the projections summarized in Exhibits 2 and 3. The costs for the second line included herein are consistent with those identified by TYJT in a follow-on effort to their report dated February 2013 on the

"twinning" line approach. Should Flint decide that it is not their preference to own this new transmission line, DWSD is receptive to other approaches, including DWSD financing and ownership.

Representation on the DWSD Board of Commissioners – DWSD is receptive to this concept and will pursue modification of the current governance structure to accommodate it.

Rate Increase "Guarantee" - DWSD proposes a guarantee that the capital portion of the Lake Huron System rate structure (the fixed monthly charge) will not increase for the life of the contract, unless additional capital investment is made in current and future Lake Huron System facilities. The only project in the current Capital Improvement Plan for the Lake Huron System is replacement of one low lift pump that is included in the fixed cost calculation. (Throughout this proposal the O&M escalation for the various revenue requirements are consistent with those applied in the TYJT evaluation conducted for the state.) In addition to the governance representation noted above and additionally through contractual treatment as a "partner" in a Lake Huron Operating Committee (proposed to have two Flint representatives and two DWSD representatives) Flint will have a level of control of such investments, and therefore a level of control over future capital revenue requirements included in the Flint rate structure. At Flint's option, an independent audit of the Lake Huron System costs can be requested annually and conducted by a mutually agreed upon firm and at a mutually agreeable cost.

Capacity - Flint will be entering a unique partnering agreement, initially purchasing capacity rights of 40 MGD in the Lake Huron Facility. The initial contract capacity would be set at 40 MGD per the specification. In addition, the contract will provide a reopener process every five years during which KWA may increase the contracted demands. DWSD will then allocate costs to Flint based on the new capacity requirement in the same manner as the initial allocation. This provision will accommodate potential growth in the KWA region without requiring Flint to encumber the full cost of projected future demands in early stages of the contract.

#### Proposed Rate Calculation

The annual revenue requirements are calculated (using FY 2013-14 as the baseline) as those that are allocable to the Lake Huron System. For purposes of this proposal, the Lake Huron System is defined as including:

- The Lake Huron Water Treatment Plant and related structures (intake, etc.)
- The 120" water main from the Lake Huron Plant to the Imlay City Pumping Station
- The Imlay City Pumping Station and related structures (reservoir, etc.)
- The 72" main from the Imlay City Pumping Station to the connection to Flint at Baxter/Potter Road

The Flint relative shares of the allocated Lake Huron System revenue requirement are based on the specifications provided by Flint. Capital costs have been allocated based on relative max day demands (for the plant) and peak hour demands (for the transmission facilities). Operation and Maintenance expenses have been allocated based on relative average day demands for all facilities.

The rate structure proposed herein recovers the allocated FY 2013-14 revenue requirements. All capital revenue requirements are proposed to be recovered through a fixed monthly charge. All operation and maintenance revenue requirements are proposed to be recoverable through a commodity rate applied to actual water purchases. An "average unit cost" per Mcf has been calculated based on the specification provided to illustrate the total revenue requirement expressed as a unit cost of projected water sales.

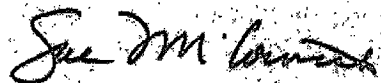
The analytical results of the proposal are illustrated in the attached table (Exhibit 1). Page 1 of this table shows the calculation of the proposed rate structure for FY 2013-14. As mentioned above, the fixed monthly charge associated with current capital costs of the Lake Huron System (shown on Line 1) will never increase so long as the purchased capacity requirement stays constant. Changes to the fixed monthly charge can increase only with (a) additional purchased capacity through the contract re-opener process (permissive to Flint), or (b) additional investment in Lake Huron System facilities for which Flint has both partnership input at the operating committee level and governance representation on the Board.

Page 2 of Exhibit 1 provides background to the rate structure calculation and illustrates the allocation of FY 2013-14 revenue requirements associated with the Lake Huron System facilities to Flint based on the contract demands set forth in the specifications document. It also illustrates the calculation of the emergency standby charge. This charge is designed to reflect the reservation of one day's worth of average daily capacity in the portions of the DWSD "backbone" (treatment and major transmission) system from which Flint will not receive "regular" service - and in which it will not be a "partner".

TYJT's report on the City of Flint Water Supply Assessment from February of this year included a number of tables and charts that compare revenue requirements to Flint under various alternatives. Attached herein is an updated Table 6.1 (Exhibit 2) which compares the cumulative annual cost of each option from the TYJT report with the new proposal included. We've also included an Exhibit 3 which is similar in format to Figure 6.1 in the TYJT report. However the data in this exhibit is a bit more inclusive, as it accumulates ALL of the annual utility costs for the KWA service area. DWSD submits that these exhibits illustrate the comparative advantage of DWSD's current proposal to the KWA proposal, and demonstrate the significant cost advantage provided with the innovative public/public partnership approach we are proposing.

In the nature of an executive summary or overview, we have submitted a companion power point presentation that calls out many of the significant features of this proposal. This is firm offer that is available with the rate season beginning July 1, 2014, however we remain open to discussion and negotiation.

Best regards,



Sue McCormick, Director  
Detroit Water & Sewerage Department

**Specification Sheet for Evaluating Water Service Options to  
Flint and/or KWA/Genesee County (KWA/GC) Service Area**

**Issued: April 22, 2013**

**Purpose:** The purpose of this document is to 1) clarify the water service requirements so that DWSD may submit a proposal responsive to the current requirements of Flint and/or KWA/GC and 2) provide a framework for a comparable and equitable analysis of water service proposals from DWSD, KWA/GC, and/or any other parties.

- **Scope:** DWSD's proposal will be evaluated based on water service delivery to(select one):

Flint only

or

Flint and

**KWA/GCC**

2. **Objectives:** Identify the outcomes and criteria that serve as the basis for evaluating water service based on the scope defined in Q. 1 above.

- **Maintain current supply standards**
- **Reduce our cost share of DWSD system we don't use**
- **Stabilize rate**
- **Increase control over cost variables (be an owner, not a user)**
- **Redundant service at Baxter Potter**

**3A. Treated Water Capacity Worksheet (5 Year Increments 2013-2042)**

	2013	2018	2023	2028	2032	2037	2042
<b><u>Flint</u></b>							
Pressure Range							
Max Day(MGD)							
Peak Hour(MGD)							
Avg Day (MGD)							
<b><u>KWA/GC</u></b>							
Pressure Range	<b>50 PSI Winter 65 PSI Summer</b>						
Max Day(MGD)	<b>40</b>	<b>43</b>	<b>47</b>	<b>50</b>	<b>53</b>	<b>57</b>	<b>60</b>
Peak Hour(MGD)	<b>44</b>	<b>47</b>	<b>52</b>	<b>55</b>	<b>58</b>	<b>63</b>	<b>66</b>
Avg Day (MGD)	<b>25</b>	<b>27</b>	<b>29</b>	<b>31</b>	<b>33</b>	<b>35</b>	<b>35</b>
<b><u>Total</u></b>							
Pressure Range							
Max Day(MGD)							
Peak Hour(MGD)							
Avg Day (MGD)							



**3B. Raw Water (End Use) Capacity Worksheet (5 Year Increments 2013-2042) in excess of the specified treated water requirements**

		2013	2018	2023	2028	2032	2037	2042
	<b><u>Flint</u></b>							
	Pressure Range							
	Max Day(MGD)							
	Peak Hour(MGD)							
	Avg Day (MGD)							
	<b><u>KWA/GC</u></b>							
	Pressure Range	0						
	Max Day(MGD)	0						
	Peak Hour(MGD)	0						
	Avg Day (MGD)	0						
	<b><u>Total</u></b>							
	Pressure Range	0						
	Max Day(MGD)	0						
	Peak Hour(MGD)	0						
	Avg Day (MGD)	0						

**4. Provide Redundancy/Reliability alternatives for Treated Water? Circle yes or no for each**

For Flint: Yes or No

For KWA/GC **Yes**

**Option 1** -Full redundancy-2<sup>nd</sup> source (specify delivery point)

--Baxter Potter or second point into Genesee County

**Option 2** – Redundancy via storage (specify location point and volume)

--Not Applicable

**5. Permission to blend? No**

If Yes, specify any operating requirements/limitations to blending.

**6. Representation:**

On DWSD Board? **Yes**

On DWSD Operating Committee? **Yes**

7. **Capital Costs:** Capital improvements/upgrades requested to achieve water service objectives.

--See No. 4

8. **Pricing:** Cost of service based on a rate model specific to named facilities and auditable account structure.

**Alternative 1:** Annual rate proposed based on budget and estimated usage, billed monthly based on metered usage.

Electable option: Subject to annual audit and true up in the next full rate year after close of audit. **NA**

**Alternative 2:** Annual fixed amount proposed based on budget and estimated usage; billed monthly in 12 equal monthly bills. Subject to annual audit and true up in the next full rate year after close of audit. **NA**

**Alternative 3:** Customer specified pricing requirement(s)

- Redundant service as a separate fixed rate

- Annual fixed amount with a commodity charge based on service from Port Huron and pipeline only.

- Capital cost and O & M for Port Huron operations only

9. **Other Criteria:** Identify any other criteria or materials that DWSD should provide for an objective evaluation of DWSD provided service compared to non-DWSD options.

- All current and future costs not to increase by more than 4.7% annually over the life of the contract

**EXHIBIT 1**  
**Calculation of DWSD Water Rate to KWA**  
***Hypothetical FY 2013-14 Rate Structure***

	<u>Annual Rev Req't (millions)</u>	<u>Unit Basis</u>	<u>Units</u>	<u>Avg Unit Cost</u>	<u>Rate Structure</u>
1 Capital Revenue Requirements	\$ 6.09	months	12		\$ 507,600 per month
2 Operating Revenue Requirements	\$ 4.40	Mcf	1.220		\$ 3.61 per Mcf
3 Subtotals / Avg Unit Cost	\$ 10.49		1.220	\$ 8.60	per Mcf
4 Standby Charge	\$ 3.32		12		\$ 276,900 per month
5 Totals / Avg Unit Cost	\$ 13.81		1.220	\$ 11.32	per Mcf
6 Total Monthly Charge					\$ 784,500 per month
7 Total Commodity Rate					\$ 3.61 per Mcf
8 plus: Redundancy Solution (a)	\$ 8.59		Not a DWSD Cost		
<u>(a) Redundancy Solution Calculations</u>					
9 Cost of Redundant Line	\$ 94.68				
10 Issuance Expenses, etc.	\$ 2.18				
11 Required Financing	\$ 96.86				
12 Finance Rate	5%				
13 Finance Term	25				
14 Annual Payment	\$ 6.87				
15 Debt Svc Coverage	125%				
16 Annual Revenue Requirement	\$ 8.59				

**TFG**

PRELIMINARY

THE FOSTER GROUP

4/23/13

**EXHIBIT 1**  
**Allocation of FY 2013-14 Revenue Requirements**

		"LH System"	KWA Communities			
		Revenue Req't \$ millions	Capacity / Usage mgd	Capacity / Usage mgd	Relative Share %	Revenue Req't \$ millions
<u>Capital Cost Recovery</u>						
1	Treatment - LH WTP	30.35	400	40	10.0%	3.04
2	Pipeline - LH to Imlay	1.35	440	44	10.0%	0.14
3	Imlay Station	6.85	440	44	10.0%	0.68
4	Pipeline - Imlay to Baxter/Potter	0.74	44	44	100.0%	0.74
5	Other (Meters, Outreach, etc.)	7.50	125	25	20.0%	1.50
6	Total Capital Cost Recovery	46.79			13.0%	6.09
<u>Operating Costs</u>						
7	Treatment - LH WTP	15.02	125	25	20.0%	3.00
8	Pipeline - LH to Imlay	0.29	125	25	20.0%	0.06
9	Imlay Station	4.51	125	25	20.0%	0.90
10	Pipeline - Imlay to Baxter/Potter	0.23	25	25	100.0%	0.23
11	Other (Meters, Outreach, etc.)	1.02	125	25	20.0%	0.20
12	Total Operation and Maintenance	21.07			20.9%	4.40
<u>Annual Revenue Req't</u>						
14	Treatment - LH WTP	35.43				6.73
25	Pipeline - LH to Imlay	2.75				1/2
26	Imlay Station	22.47				2/6
27	Pipeline - Imlay to Baxter/Potter	1.7				1/7
28	Other (Meters, Outreach, etc.)	9.63				2/81
29	Total Annual Revenue Req't	78.98				21/5

**DrdrvrhbjpogTuboecz!Di bshf**

	<b>Upbm</b>	<b>M ITztfn</b>	<b>Pufs</b>
2: Dbqbjuz! In he	2-871	511	2-471
31 Upbrt#Cbel cpof #DbqjbrtDpt ut! !% jnrjpot	338/65	57/8:	291/86
32 VojuDbqjbrtDpt ut	1/23:	1/228	1/244
33 Tuboecz!Sfr vjsfn fou!>Bwf shf IEbz			36
34 Tuboecz!Sfr vjovf!Sfr vjsfn fou! !% jnrjpot			4/43

**TFG**

Extra

**Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**To:** Hedman, Susan  
**Subject:** RE: talking points

---

**From:** Hedman, Susan [mailto:[hedman.susan@epa.gov](mailto:hedman.susan@epa.gov)]  
**Sent:** Thursday, October 01, 2015 7:27 PM  
**To:** Wyant, Dan (DEQ)  
**Subject:** RE: talking points

Further to our conversation, please note that lead and copper monitoring is used to determine:

- 1) Whether corrosion control is optimized. Under 141.81(b)(3), a water system is deemed to have optimum corrosion control if it submits results of tap water monitoring that demonstrates for 2 consecutive six-month periods that the 90<sup>th</sup> percentile level is below 5 ug/L (ppb). Because Flint exceeded this level, the City is required to implement corrosion control – as noted in MDEQ's August 17<sup>th</sup> letter to the City of Flint which states: "Since the City did not meet these criteria in both the July–December 2014, and January–June 2015, sampling periods, the City must now recommend a treatment to fully optimize corrosion control treatment . . . ."
- 2) Whether the lead action level (15ug/L) has been exceeded. Under 141.84(a), systems that fail to meet the lead action level in tap samples after installing corrosion control treatment must replace lead service lines – 7% of the lead service lines in its distribution system.

---

**From:** Wyant, Dan (DEQ) [mailto:[WyantD@michigan.gov](mailto:WyantD@michigan.gov)]  
**Sent:** Thursday, October 01, 2015 5:02 PM  
**To:** Hedman, Susan  
**Subject:** Fwd: talking points

Talking points. I will make the adjustment you and I talked about. Thanks for your help.

Sent from my iPhone

Begin forwarded message:

**From:** "Tommasulo, Karen (DEQ)" <[TommasuloK@michigan.gov](mailto:TommasuloK@michigan.gov)>  
**Date:** October 1, 2015 at 4:27:53 PM EDT  
**To:** "Pallone, Maggie (DEQ)" <[PalloneM@michigan.gov](mailto:PalloneM@michigan.gov)>, "Minicuci, Angela (DHHS)" <[MinicuciA@michigan.gov](mailto:MinicuciA@michigan.gov)>, "Eisner, Jennifer (DHHS)" <[EisnerJ@michigan.gov](mailto:EisnerJ@michigan.gov)>, "Hertel, Elizabeth (DHHS)" <[HertelE@michigan.gov](mailto:HertelE@michigan.gov)>, "Wurfel, Brad (DEQ)" <[WurfelB@michigan.gov](mailto:WurfelB@michigan.gov)>, "Wurfel, Sara (GOV)" <[Wurfels@michigan.gov](mailto:Wurfels@michigan.gov)>, "Murray, David (GOV)" <[MurrayD1@michigan.gov](mailto:MurrayD1@michigan.gov)>, "Thelen, Mary Beth (DEQ)" <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)>, "Wyant, Dan (DEQ)" <[WyantD@michigan.gov](mailto:WyantD@michigan.gov)>, "Paciorek, Josh (GOV)" <[PaciorekJ@michigan.gov](mailto:PaciorekJ@michigan.gov)>, "Lasher, GERALYN (DHHS)" <[lasherg@michigan.gov](mailto:lasherg@michigan.gov)>  
**Subject:** talking points



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Title 40: Protection of Environment

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

**Subpart I—Control of Lead and Copper****Contents**

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Source: 56 FR 26548, June 7, 1991, unless otherwise noted.

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**§141.80 General requirements.**

(a) *Applicability and effective dates.* (1) The requirements of this subpart I constitute the national primary drinking water regulations for lead and copper. Unless otherwise indicated, each of the provisions of this subpart applies to community water systems and non-transient, non-community water systems (hereinafter referred to as "water systems" or "systems").

(2) [Reserved].

(b) *Scope.* These regulations establish a treatment technique that includes requirements for corrosion control treatment, source water treatment, lead service line replacement, and public education. These requirements are triggered, in some cases, by lead and copper action levels measured in samples collected at consumers' taps.

(c) *Lead and copper action levels.* (1) The lead action level is exceeded if the concentration of lead in more than 10 percent of tap water samples collected during any monitoring period conducted in accordance with §141.86 is greater than 0.015 mg/L (i.e., if the "90th percentile" lead level is greater than 0.015 mg/L).

(2) The copper action level is exceeded if the concentration of copper in more than 10 percent of tap water samples collected during any monitoring period conducted in accordance with §141.86 is greater than 1.3 mg/L (i.e., if the "90th percentile" copper level is greater than 1.3 mg/L).

(3) The 90th percentile lead and copper levels shall be computed as follows:

(i) The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number 1 for the sample with the lowest

contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.

(ii) The number of samples taken during the monitoring period shall be multiplied by 0.9.

(iii) The contaminant concentration in the numbered sample yielded by the calculation in paragraph (c)(3)(ii) is the 90th percentile contaminant level.

(iv) For water systems serving fewer than 100 people that collect 5 samples per monitoring period, the 90th percentile is computed by taking the average of the highest and second highest concentrations.

(v) For a public water system that has been allowed by the State to collect fewer than five samples in accordance with §141.86(c), the sample result with the highest concentration is considered the 90th percentile value.

(d) *Corrosion control treatment requirements.* (1) All water systems shall install and operate optimal corrosion control treatment as defined in §141.2.

(2) Any water system that complies with the applicable corrosion control treatment requirements specified by the State under §§141.81 and 141.82 shall be deemed in compliance with the treatment requirement contained in paragraph (d)(1) of this section.

(e) *Source water treatment requirements.* Any system exceeding the lead or copper action level shall implement all applicable source water treatment requirements specified by the State under §141.83.

(f) *Lead service line replacement requirements.* Any system exceeding the lead action level after implementation of applicable corrosion control and source water treatment requirements shall complete the lead service line replacement requirements contained in §141.84.

(g) *Public education requirements.* Pursuant to §141.85, all water systems must provide a consumer notice of lead tap water monitoring results to persons served at the sites (taps) that are tested. Any system exceeding the lead action level shall implement the public education requirements.

(h) *Monitoring and analytical requirements.* Tap water monitoring for lead and copper, monitoring for water quality parameters, source water monitoring for lead and copper, and analyses of the monitoring results under this subpart shall be completed in compliance with §§141.86, 141.87, 141.88, and 141.89.

(i) *Reporting requirements.* Systems shall report to the State any information required by the treatment provisions of this subpart and §141.90.

(j) *Recordkeeping requirements.* Systems shall maintain records in accordance with §141.91.

(k) *Violation of national primary drinking water regulations.* Failure to comply with the applicable requirements of §§141.80-141.91, including requirements established by the State pursuant to these provisions, shall constitute a violation of the national primary drinking water regulations for lead and/or copper.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 72 FR 57814, Oct. 10, 2007]

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#### **§141.81 Applicability of corrosion control treatment steps to small, medium-size and large water systems.**

(a) Systems shall complete the applicable corrosion control treatment requirements described in §141.82 by the deadlines established in this section.

(1) A large system (serving >50,000 persons) shall complete the corrosion control treatment steps specified in paragraph (d) of this section, unless it is deemed to have optimized corrosion control under paragraph (b)(2) or (b)(3) of this section.

(2) A small system (serving ≤3300 persons) and a medium-size system (serving >3,300 and ≤50,000 persons) shall complete the corrosion control treatment steps specified in paragraph (e) of this section, unless it is deemed to have optimized corrosion control under paragraph (b)(1), (b)(2), or (b)(3) of this section.

(b) A system is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in this section if the system satisfies one of the criteria specified in paragraphs (b)(1) through (b)(3) of this section. Any such system deemed to have optimized corrosion control under this paragraph, and which has treatment in place, shall continue to operate and maintain optimal corrosion control treatment and meet any requirements that the State determines appropriate to ensure optimal corrosion control treatment is maintained.

(1) A small or medium-size water system is deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two consecutive six-month monitoring periods conducted in accordance with §141.86.

(2) Any water system may be deemed by the State to have optimized corrosion control treatment if the system demonstrates to the satisfaction of the State that it has conducted activities equivalent to the corrosion control steps applicable to such system under this section. If the State makes this determination, it shall provide the system with written notice explaining the basis for its decision and shall specify the water quality control parameters representing optimal corrosion control in accordance with §141.82(f). Water systems deemed to have optimized corrosion control

under this paragraph shall operate in compliance with the State-designated optimal water quality control parameters in accordance with §141.82(g) and continue to conduct lead and copper tap and water quality parameter sampling in accordance with §141.86(d)(3) and §141.87(d), respectively. A system shall provide the State with the following information in order to support a determination under this paragraph:

- (i) The results of all test samples collected for each of the water quality parameters in §141.82(c)(3).
  - (ii) A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in §141.82(c)(1), the results of all tests conducted, and the basis for the system's selection of optimal corrosion control treatment;
  - (iii) A report explaining how corrosion control has been installed and how it is being maintained to insure minimal lead and copper concentrations at consumers' taps; and
  - (iv) The results of tap water samples collected in accordance with §141.86 at least once every six months for one year after corrosion control has been installed.
- (3) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with §141.86 and source water monitoring conducted in accordance with §141.88 that demonstrates for two consecutive 6-month monitoring periods that the difference between the 90th percentile tap water lead level computed under §141.80(c)(3), and the highest source water lead concentration is less than the Practical Quantitation Level for lead specified in §141.89(a)(1)(ii).
- (i) Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this paragraph if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive 6-month monitoring periods.
  - (ii) Any water system deemed to have optimized corrosion control in accordance with this paragraph shall continue monitoring for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of sites specified in §141.86(c) and collecting the samples at times and locations specified in §141.86(d)(4)(iv). Any such system that has not conducted a round of monitoring pursuant to §141.86(d) since September 30, 1997, shall complete a round of monitoring pursuant to this paragraph no later than September 30, 2000.
  - (iii) Any water system deemed to have optimized corrosion control pursuant to this paragraph shall notify the State in writing pursuant to §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State may require any such system to conduct additional monitoring or to take other action the State deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system.
  - (iv) As of July 12, 2001, a system is not deemed to have optimized corrosion control under this paragraph, and shall implement corrosion control treatment pursuant to paragraph (b)(3)(v) of this section unless it meets the copper action level.
  - (v) Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this paragraph shall implement corrosion control treatment in accordance with the deadlines in paragraph (e) of this section. Any such large system shall adhere to the schedule specified in that paragraph for medium-size systems, with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under this paragraph.
- (c) Any small or medium-size water system that is required to complete the corrosion control steps due to its exceedance of the lead or copper action level may cease completing the treatment steps whenever the system meets both action levels during each of two consecutive monitoring periods conducted pursuant to §141.86 and submits the results to the State. If any such water system thereafter exceeds the lead or copper action level during any monitoring period, the system (or the State, as the case may be) shall recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The State may require a system to repeat treatment steps previously completed by the system where the State determines that this is necessary to implement properly the treatment requirements of this section. The State shall notify the system in writing of such a determination and explain the basis for its decision. The requirement for any small- or medium-size system to implement corrosion control treatment steps in accordance with paragraph (e) of this section (including systems deemed to have optimized corrosion control under paragraph (b)(1) of this section) is triggered whenever any small- or medium-size system exceeds the lead or copper action level.
- (d) *Treatment steps and deadlines for large systems.* Except as provided in paragraph (b) (2) and (3) of this section, large systems shall complete the following corrosion control treatment steps (described in the referenced portions of §§141.82, 141.86, and 141.87) by the indicated dates.
- (1) *Step 1:* The system shall conduct initial monitoring (§141.86(d)(1) and §141.87(b)) during two consecutive six-month monitoring periods by January 1, 1993.
  - (2) *Step 2:* The system shall complete corrosion control studies (§141.82(c)) by July 1, 1994.
  - (3) *Step 3:* The State shall designate optimal corrosion control treatment (§141.82(d)) by January 1, 1995.
  - (4) *Step 4:* The system shall install optimal corrosion control treatment (§141.82(e)) by January 1, 1997.
  - (5) *Step 5:* The system shall complete follow-up sampling (§141.86(d)(2) and §141.87(c)) by January 1, 1998.
  - (6) *Step 6:* The State shall review installation of treatment and designate optimal water quality control parameters (§141.82(f)) by July 1, 1998.



(7) *Step 7:* The system shall operate in compliance with the State-specified optimal water quality control parameters (§141.82(g)) and continue to conduct tap sampling (§141.86(d)(3) and §141.87(d)).

(e) *Treatment Steps and deadlines for small and medium-size systems.* Except as provided in paragraph (b) of this section, small and medium-size systems shall complete the following corrosion control treatment steps (described in the referenced portions of §§141.82, 141.86 and 141.87) by the indicated time periods.

(1) *Step 1:* The system shall conduct initial tap sampling (§141.86(d)(1) and §141.87(b)) until the system either exceeds the lead or copper action level or becomes eligible for reduced monitoring under §141.86(d)(4). A system exceeding the lead or copper action level shall recommend optimal corrosion control treatment (§141.82(a)) within six months after the end of the monitoring period during which it exceeds one of the action levels.

(2) *Step 2:* Within 12 months after the end of the monitoring period during which a system exceeds the lead or copper action level, the State may require the system to perform corrosion control studies (§141.82(b)). If the State does not require the system to perform such studies, the State shall specify optimal corrosion control treatment (§141.82(d)) within the following timeframes:

(i) For medium-size systems, within 18 months after the end of the monitoring period during which such system exceeds the lead or copper action level.

(ii) For small systems, within 24 months after the end of the monitoring period during which such system exceeds the lead or copper action level.

(3) *Step 3:* If the State requires a system to perform corrosion control studies under step 2, the system shall complete the studies (§141.82(c)) within 18 months after the State requires that such studies be conducted.

(4) *Step 4:* If the system has performed corrosion control studies under step 2, the State shall designate optimal corrosion control treatment (§141.82(d)) within 6 months after completion of step 3.

(5) *Step 5:* The system shall install optimal corrosion control treatment (§141.82(e)) within 24 months after the State designates such treatment.

(6) *Step 6:* The system shall complete follow-up sampling (§141.86(d)(2) and §141.87(c)) within 36 months after the State designates optimal corrosion control treatment.

(7) *Step 7:* The State shall review the system's installation of treatment and designate optimal water quality control parameters (§141.82(f)) within 6 months after completion of step 6.

(8) *Step 8:* The system shall operate in compliance with the State-designated optimal water quality control parameters (§141.82(g)) and continue to conduct tap sampling (§141.86(d)(3) and §141.87(d)).

[56 FR 26548, June 7, 1991, as amended at 59 FR 33862, June 30, 1994; 65 FR 2004, Jan. 12, 2000; 72 FR 57814, Oct. 10, 2007]

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#### **§141.82 Description of corrosion control treatment requirements.**

Each system shall complete the corrosion control treatment requirements described below which are applicable to such system under §141.81.

(a) *System recommendation regarding corrosion control treatment.* Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, small and medium-size water systems exceeding the lead or copper action level shall recommend installation of one or more of the corrosion control treatments listed in paragraph (c)(1) of this section which the system believes constitutes optimal corrosion control for that system. The State may require the system to conduct additional water quality parameter monitoring in accordance with §141.87(b) to assist the State in reviewing the system's recommendation.

(b) *State decision to require studies of corrosion control treatment (applicable to small and medium-size systems).* The State may require any small or medium-size system that exceeds the lead or copper action level to perform corrosion control studies under paragraph (c) of this section to identify optimal corrosion control treatment for the system.

(c) *Performance of corrosion control studies.* (1) Any public water system performing corrosion control studies shall evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that system:

(i) Alkalinity and pH adjustment;

(ii) Calcium hardness adjustment; and

(iii) The addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

(2) The water system shall evaluate each of the corrosion control treatments using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other systems of similar size, water chemistry and distribution system configuration.

(3) The water system shall measure the following water quality parameters in any tests conducted under this

paragraph before and after evaluating the corrosion control treatments listed above:

- (i) Lead;
- (ii) Copper;
- (iii) pH;
- (iv) Alkalinity;
- (v) Calcium;
- (vi) Conductivity;
- (vii) Orthophosphate (when an inhibitor containing a phosphate compound is used);
- (viii) Silicate (when an inhibitor containing a silicate compound is used);
- (ix) Water temperature.

(4) The water system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

(i) Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another water system with comparable water quality characteristics; and/or

(ii) Data and documentation demonstrating that the water system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

(5) The water system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(6) On the basis of an analysis of the data generated during each evaluation, the water system shall recommend to the State in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system. The water system shall provide a rationale for its recommendation along with all supporting documentation specified in paragraphs (c) (1) through (5) of this section.

(d) *State designation of optimal corrosion control treatment.* (1) Based upon consideration of available information including, where applicable, studies performed under paragraph (c) of this section and a system's recommended treatment alternative, the State shall either approve the corrosion control treatment option recommended by the system, or designate alternative corrosion control treatment(s) from among those listed in paragraph (c)(1) of this section. When designating optimal treatment the State shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

(2) The State shall notify the system of its decision on optimal corrosion control treatment in writing and explain the basis for this determination. If the State requests additional information to aid its review, the water system shall provide the information.

(e) *Installation of optimal corrosion control.* Each system shall properly install and operate throughout its distribution system the optimal corrosion control treatment designated by the State under paragraph (d) of this section.

(f) *State review of treatment and specification of optimal water quality control parameters.* The State shall evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the water system and determine whether the system has properly installed and operated the optimal corrosion control treatment designated by the State in paragraph (d) of this section. Upon reviewing the results of tap water and water quality parameter monitoring by the system, both before and after the system installs optimal corrosion control treatment, the State shall designate:

- (1) A minimum value or a range of values for pH measured at each entry point to the distribution system;
- (2) A minimum pH value, measured in all tap samples. Such value shall be equal to or greater than 7.0, unless the State determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the system to optimize corrosion control;
- (3) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the State determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system;
- (4) If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples;
- (5) If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples.

The values for the applicable water quality control parameters listed above shall be those that the State determines to reflect optimal corrosion control treatment for the system. The State may designate values for additional water quality control parameters determined by the State to reflect optimal corrosion control for the system. The State shall notify the system in writing of these determinations and explain the basis for its decisions.

(g) *Continued operation and monitoring.* All systems optimizing corrosion control shall continue to operate and

maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the State under paragraph (f) of this section, in accordance with this paragraph for all samples collected under §141.87(d) through (f). Compliance with the requirements of this paragraph shall be determined every six months, as specified under §141.87(d). A water system is out of compliance with the requirements of this paragraph for a six-month period if it has excursions for any State-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the State. Daily values are calculated as follows. States have discretion to delete results of obvious sampling errors from this calculation.

(1) On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both. If EPA has approved an alternative formula under §142.16 of this chapter in the State's application for a program revision submitted pursuant to §142.12 of this chapter, the State's formula shall be used to aggregate multiple measurements taken at a sampling point for the water quality parameter in lieu of the formula in this paragraph.

(2) On days when only one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the result of that measurement.

(3) On days when no measurement is collected for the water quality parameter at the sampling location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the sample site.

(h) *Modification of State treatment decisions.* Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of the optimal corrosion control treatment under paragraph (d) of this section or optimal water quality control parameters under paragraph (f) of this section. A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The State may modify its determination where it concludes that such change is necessary to ensure that the system continues to optimize corrosion control treatment. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the State's decision, and provide an implementation schedule for completing the treatment modifications.

(i) *Treatment decisions by EPA in lieu of the State.* Pursuant to the procedures in §142.19, the EPA Regional Administrator may review treatment determinations made by a State under paragraphs (d), (f), or (h) of this section and issue federal treatment determinations consistent with the requirements of those paragraphs where the Regional Administrator finds that:

- (1) A State has failed to issue a treatment determination by the applicable deadlines contained in §141.81,
- (2) A State has abused its discretion in a substantial number of cases or in cases affecting a substantial population, or
- (3) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.

[56 FR 26548, June 7, 1991, as amended at 65 FR 2004, Jan. 12, 2000]

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### §141.83 Source water treatment requirements.

Systems shall complete the applicable source water monitoring and treatment requirements (described in the referenced portions of paragraph (b) of this section, and in §§141.86, and 141.88) by the following deadlines.

(a) *Deadlines for completing source water treatment steps*—(1) *Step 1:* A system exceeding the lead or copper action level shall complete lead and copper source water monitoring (§141.88(b)) and make a treatment recommendation to the State (§141.83(b)(1)) no later than 180 days after the end of the monitoring period during which the lead or copper action level was exceeded.

(2) *Step 2:* The State shall make a determination regarding source water treatment (§141.83(b)(2)) within 6 months after submission of monitoring results under step 1.

(3) *Step 3:* If the State requires installation of source water treatment, the system shall install the treatment (§141.83(b)(3)) within 24 months after completion of step 2.

(4) *Step 4:* The system shall complete follow-up tap water monitoring (§141.86(d)(2)) and source water monitoring (§141.88(c)) within 36 months after completion of step 2.

(5) *Step 5:* The State shall review the system's installation and operation of source water treatment and specify maximum permissible source water levels (§141.83(b)(4)) within 6 months after completion of step 4.

(6) *Step 6:* The system shall operate in compliance with the State-specified maximum permissible lead and copper source water levels (§141.83(b)(4)) and continue source water monitoring (§141.88(d)).

(b) *Description of source water treatment requirements*—(1) *System treatment recommendation.* Any system which exceeds the lead or copper action level shall recommend in writing to the State the installation and operation of one of the source water treatments listed in paragraph (b)(2) of this section. A system may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels

at users' taps.

(2) *State determination regarding source water treatment.* The State shall complete an evaluation of the results of all source water samples submitted by the water system to determine whether source water treatment is necessary to minimize lead or copper levels in water delivered to users' taps. If the State determines that treatment is needed, the State shall either require installation and operation of the source water treatment recommended by the system (if any) or require the installation and operation of another source water treatment from among the following: ion exchange, reverse osmosis, lime softening or coagulation/filtration. If the State requests additional information to aid in its review, the water system shall provide the information by the date specified by the State in its request. The State shall notify the system in writing of its determination and set forth the basis for its decision.

(3) *Installation of source water treatment.* Each system shall properly install and operate the source water treatment designated by the State under paragraph (b)(2) of this section.

(4) *State review of source water treatment and specification of maximum permissible source water levels.* The State shall review the source water samples taken by the water system both before and after the system installs source water treatment, and determine whether the system has properly installed and operated the source water treatment designated by the State. Based upon its review, the State shall designate the maximum permissible lead and copper concentrations for finished water entering the distribution system. Such levels shall reflect the contaminant removal capability of the treatment properly operated and maintained. The State shall notify the system in writing and explain the basis for its decision.

(5) *Continued operation and maintenance.* Each water system shall maintain lead and copper levels below the maximum permissible concentrations designated by the State at each sampling point monitored in accordance with §141.88. The system is out of compliance with this paragraph if the level of lead or copper at any sampling point is greater than the maximum permissible concentration designated by the State.

(6) *Modification of State treatment decisions.* Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of the source water treatment under paragraph (b)(2) of this section, or maximum permissible lead and copper concentrations for finished water entering the distribution system under paragraph (b)(4) of this section. A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The State may modify its determination where it concludes that such change is necessary to ensure that the system continues to minimize lead and copper concentrations in source water. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the State's decision, and provide an implementation schedule for completing the treatment modifications.

(7) *Treatment decisions by EPA in lieu of the State.* Pursuant to the procedures in §142.19, the EPA Regional Administrator may review treatment determinations made by a State under paragraphs (b)(2), (4), or (6) of this section and issue Federal treatment determinations consistent with the requirements of those paragraphs where the Administrator finds that:

- (i) A State has failed to issue a treatment determination by the applicable deadlines contained in §141.83(a),
- (ii) A state has abused its discretion in a substantial number of cases or in cases affecting a substantial population, or
- (iii) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.

[56 FR 26548, June 7, 1991, as amended at 72 FR 57815, Oct. 10, 2007]

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#### **§141.84 Lead service line replacement requirements.**

(a) Systems that fail to meet the lead action level in tap samples taken pursuant to §141.86(d)(2), after installing corrosion control and/or source water treatment (whichever sampling occurs later), shall replace lead service lines in accordance with the requirements of this section. If a system is in violation of §141.81 or §141.83 for failure to install source water or corrosion control treatment, the State may require the system to commence lead service line replacement under this section after the date by which the system was required to conduct monitoring under §141.86(d)(2) has passed.

(b)(1) A water system shall replace annually at least 7 percent of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead lines in place at the time the replacement program begins. The system shall identify the initial number of lead service lines in its distribution system, including an identification of the portion(s) owned by the system, based on a materials evaluation, including the evaluation required under §141.86(a) and relevant legal authorities (e.g., contracts, local ordinances) regarding the portion owned by the system. The first year of lead service line replacement shall begin on the first day following the end of the monitoring period in which the action level was exceeded under paragraph (a) of this section. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If the State has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

(2) Any water system resuming a lead service line replacement program after the cessation of its lead service line replacement program as allowed by paragraph (f) of this section shall update its inventory of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under

paragraph (c) of this section. The system will then divide the updated number of remaining lead service lines by the number of remaining years in the program to determine the number of lines that must be replaced per year (7 percent lead service line replacement is based on a 15-year replacement program, so, for example, systems resuming lead service line replacement after previously conducting two years of replacement would divide the updated inventory by 13). For those systems that have completed a 15-year lead service line replacement program, the State will determine a schedule for replacing or retesting lines that were previously tested out under the replacement program when the system re-exceeds the action level.

(c) A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, taken pursuant to §141.86(b)(3), is less than or equal to 0.015 mg/L.

(d) A water system shall replace that portion of the lead service line that it owns. In cases where the system does not own the entire lead service line, the system shall notify the owner of the line, or the owner's authorized agent, that the system will replace the portion of the service line that it owns and shall offer to replace the owner's portion of the line. A system is not required to bear the cost of replacing the privately-owned portion of the line, nor is it required to replace the privately-owned portion where the owner chooses not to pay the cost of replacing the privately-owned portion of the line, or where replacing the privately-owned portion would be precluded by State, local or common law. A water system that does not replace the entire length of the service line also shall complete the following tasks.

(1) At least 45 days prior to commencing with the partial replacement of a lead service line, the water system shall provide notice to the resident(s) of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The State may allow the water system to provide notice under the previous sentence less than 45 days prior to commencing partial lead service line replacement where such replacement is in conjunction with emergency repairs. In addition, the water system shall inform the resident(s) served by the line that the system will, at the system's expense, collect a sample from each partially-replaced lead service line that is representative of the water in the service line for analysis of lead content, as prescribed under §141.86(b)(3), within 72 hours after the completion of the partial replacement of the service line. The system shall collect the sample and report the results of the analysis to the owner and the resident(s) served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered "on time."

(2) The water system shall provide the information required by paragraph (d)(1) of this section to the residents of individual dwellings by mail or by other methods approved by the State. In instances where multi-family dwellings are served by the line, the water system shall have the option to post the information at a conspicuous location.

(e) The State shall require a system to replace lead service lines on a shorter schedule than that required by this section, taking into account the number of lead service lines in the system, where such a shorter replacement schedule is feasible. The State shall make this determination in writing and notify the system of its finding within 6 months after the system is triggered into lead service line replacement based on monitoring referenced in paragraph (a) of this section.

(f) Any system may cease replacing lead service lines whenever first draw samples collected pursuant to §141.86(b)(2) meet the lead action level during each of two consecutive monitoring periods and the system submits the results to the State. If first draw tap samples collected in any such system thereafter exceeds the lead action level, the system shall recommence replacing lead service lines pursuant to paragraph (b)(2) of this section.

(g) To demonstrate compliance with paragraphs (a) through (d) of this section, a system shall report to the State the information specified in §141.90(e).

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 65 FR 2005, Jan. 12, 2000; 72 FR 57815, Oct. 10, 2007]

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#### **§141.85 Public education and supplemental monitoring requirements.**

All water systems must deliver a consumer notice of lead tap water monitoring results to persons served by the water system at sites that are tested, as specified in paragraph (d) of this section. A water system that exceeds the lead action level based on tap water samples collected in accordance with §141.86 shall deliver the public education materials contained in paragraph (a) of this section in accordance with the requirements in paragraph (b) of this section. Water systems that exceed the lead action level must sample the tap water of any customer who requests it in accordance with paragraph (c) of this section.

(a) *Content of written public education materials*—(1) *Community water systems and non-transient non-community water systems.* Water systems must include the following elements in printed materials (e.g., brochures and pamphlets) in the same order as listed below. In addition, language in paragraphs (a)(1)(i) through (ii) and (a)(1)(vi) of this section must be included in the materials, exactly as written, except for the text in brackets in these paragraphs for which the water system must include system-specific information. Any additional information presented by a water system must be consistent with the information below and be in plain language that can be understood by the general public. Water systems must submit all written public education materials to the State prior to delivery. The State may require the system to obtain approval of the content of written public materials prior to delivery.

(i) **IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER.** [INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(ii) *Health effects of lead.* Lead can cause serious health problems if too much enters your body from drinking water

or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

(iii) *Sources of lead.* (A) Explain what lead is.

(B) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials and service lines that may contain lead.

(C) Discuss other important sources of lead exposure in addition to drinking water (e.g., paint).

(iv) Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(A) Encourage running the water to flush out the lead.

(B) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(C) Explain that boiling water does not reduce lead levels.

(D) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(E) Suggest that parents have their child's blood tested for lead.

(v) Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(vi) For more information, call us at [INSERT YOUR NUMBER] [(IF APPLICABLE), or visit our Web site at [INSERT YOUR WEB SITE HERE]]. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's Web site at <http://www.epa.gov/lead> or contact your health care provider.

(2) *Community water systems.* In addition to including the elements specified in paragraph (a)(1) of this section, community water systems must:

(i) Tell consumers how to get their water tested.

(ii) Discuss lead in plumbing components and the difference between low lead and lead free.

(b) *Delivery of public education materials.* (1) For public water systems serving a large proportion of non-English speaking consumers, as determined by the State, the public education materials must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(2) A community water system that exceeds the lead action level on the basis of tap water samples collected in accordance with §141.86, and that is not already conducting public education tasks under this section, must conduct the public education tasks under this section within 60 days after the end of the monitoring period in which the exceedance occurred:

(i) Deliver printed materials meeting the content requirements of paragraph (a) of this section to all bill paying customers.

(ii)(A) Contact customers who are most at risk by delivering education materials that meet the content requirements of paragraph (a) of this section to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users. The water system must contact the local public health agencies directly by phone or in person. The local public health agencies may provide a specific list of additional community based organizations serving target populations, which may include organizations outside the service area of the water system. If such lists are provided, systems must deliver education materials that meet the content requirements of paragraph (a) of this section to all organizations on the provided lists.

(B) Contact customers who are most at risk by delivering materials that meet the content requirements of paragraph (a) of this section to the following organizations listed in 1 through 6 that are located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

(1) Public and private schools or school boards.

(2) Women, Infants and Children (WIC) and Head Start programs.

(3) Public and private hospitals and medical clinics.

(4) Pediatricians.

(5) Family planning clinics.

(6) Local welfare agencies.

(C) Make a good faith effort to locate the following organizations within the service area and deliver materials that meet the content requirements of paragraph (a) of this section to them, along with an informational notice that encourages distribution to all potentially affected customers or users. The good faith effort to contact at-risk customers may include requesting a specific contact list of these organizations from the local public health agencies, even if the agencies are not located within the water system's service area:

- (1) Licensed childcare centers
- (2) Public and private preschools.
- (3) Obstetricians-Gynecologists and Midwives.

(iii) No less often than quarterly, provide information on or in each water bill as long as the system exceeds the action level for lead. The message on the water bill must include the following statement exactly as written except for the text in brackets for which the water system must include system-specific information: [INSERT NAME OF WATER SYSTEM] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call [INSERT NAME OF WATER SYSTEM] [or visit (INSERT YOUR WEB SITE HERE)]. The message or delivery mechanism can be modified in consultation with the State; specifically, the State may allow a separate mailing of public education materials to customers if the water system cannot place the information on water bills.

(iv) Post material meeting the content requirements of paragraph (a) of this section on the water system's Web site if the system serves a population greater than 100,000.

(v) Submit a press release to newspaper, television and radio stations.

(vi) In addition to paragraphs (b)(2)(i) through (v) of this section, systems must implement at least three activities from one or more categories listed below. The educational content and selection of these activities must be determined in consultation with the State.

- (A) Public Service Announcements.
- (B) Paid advertisements.
- (C) Public Area Information Displays.
- (D) E-mails to customers.
- (E) Public Meetings.
- (F) Household Deliveries.
- (G) Targeted Individual Customer Contact.
- (H) Direct material distribution to all multi-family homes and institutions.
- (I) Other methods approved by the State.

(vii) For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the State has established an alternate monitoring period, the last day of that period.

(3) As long as a community water system exceeds the action level, it must repeat the activities pursuant to paragraph (b)(2) of this section as described in paragraphs (b)(3)(i) through (iv) of this section.

(i) A community water system shall repeat the tasks contained in paragraphs (b)(2)(i), (ii) and (vi) of this section every 12 months.

(ii) A community water system shall repeat tasks contained in paragraph (b)(2)(iii) of this section with each billing cycle.

(iii) A community water system serving a population greater than 100,000 shall post and retain material on a publicly accessible Web site pursuant to paragraph (b)(2)(iv) of this section.

(iv) The community water system shall repeat the task in paragraph (b)(2)(v) of this section twice every 12 months on a schedule agreed upon with the State. The State can allow activities in paragraph (b)(2) of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the State in advance of the 60-day deadline.

(4) Within 60 days after the end of the monitoring period in which the exceedance occurred (unless it already is repeating public education tasks pursuant to paragraph (b)(5) of this section), a non-transient non-community water system shall deliver the public education materials specified by paragraph (a) of this section as follows:

(i) Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and

(ii) Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the non-transient non-community water system. The State may allow the system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage.

(iii) For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring

period is September 30 of the calendar year in which the sampling occurs, or, if the State has established an alternate monitoring period, the last day of that period.

(5) A non-transient non-community water system shall repeat the tasks contained in paragraph (b)(4) of this section at least once during each calendar year in which the system exceeds the lead action level. The State can allow activities in (b)(4) of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the State in advance of the 60-day deadline.

(6) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period conducted pursuant to §141.86. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(7) A community water system may apply to the State, in writing (unless the State has waived the requirement for prior State approval), to use only the text specified in paragraph (a)(1) of this section in lieu of the text in paragraphs (a)(1) and (a)(2) of this section and to perform the tasks listed in paragraphs (b)(4) and (b)(5) of this section in lieu of the tasks in paragraphs (b)(2) and (b)(3) of this section if:

(i) The system is a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices; and

(ii) The system provides water as part of the cost of services provided and does not separately charge for water consumption.

(8) A community water system serving 3,300 or fewer people may limit certain aspects of their public education programs as follows:

(i) With respect to the requirements of paragraph (b)(2)(vi) of this section, a system serving 3,300 or fewer must implement at least one of the activities listed in that paragraph.

(ii) With respect to the requirements of paragraph (b)(2)(ii) of this section, a system serving 3,300 or fewer people may limit the distribution of the public education materials required under that paragraph to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(iii) With respect to the requirements of paragraph (b)(2)(v) of this section, the State may waive this requirement for systems serving 3,300 or fewer persons as long as system distributes notices to every household served by the system.

(c) *Supplemental monitoring and notification of results.* A water system that fails to meet the lead action level on the basis of tap samples collected in accordance with §141.86 shall offer to sample the tap water of any customer who requests it. The system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

(d) *Notification of results—(1) Reporting requirement.* All water systems must provide a notice of the individual tap results from lead tap water monitoring carried out under the requirements of §141.86 to the persons served by the water system at the specific sampling site from which the sample was taken (e.g., the occupants of the residence where the tap was tested).

(2) *Timing of notification.* A water system must provide the consumer notice as soon as practical, but no later than 30 days after the system learns of the tap monitoring results.

(3) *Content.* The consumer notice must include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, list steps consumers can take to reduce exposure to lead in drinking water and contact information for the water utility. The notice must also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from §141.153(c).

(4) *Delivery.* The consumer notice must be provided to persons served at the tap that was tested, either by mail or by another method approved by the State. For example, upon approval by the State, a non-transient non-community water system could post the results on a bulletin board in the facility to allow users to review the information. The system must provide the notice to customers at sample taps tested, including consumers who do not receive water bills.

[72 FR 57815, Oct. 10, 2007]

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#### §141.86 Monitoring requirements for lead and copper in tap water.

(a) *Sample site location.* (1) By the applicable date for commencement of monitoring under paragraph (d)(1) of this section, each water system shall complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meets the requirements of this section, and which is sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in paragraph (c) of this section. All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

(2) A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under §141.42(d) of this part [special monitoring for corrosivity characteristics] when conducting a materials evaluation. When an evaluation of the information collected pursuant to §141.42(d) is insufficient to locate the requisite number of



lead and copper sampling sites that meet the targeting criteria in paragraph (a) of this section, the water system shall review the sources of information listed below in order to identify a sufficient number of sampling sites. In addition, the system shall seek to collect such information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):

(i) All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;

(ii) All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and

(iii) All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

(3) The sampling sites selected for a community water system's sampling pool ("tier 1 sampling sites") shall consist of single family structures that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line. When multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may include these types of structures in its sampling pool.

(4) Any community water system with insufficient tier 1 sampling sites shall complete its sampling pool with "tier 2 sampling sites", consisting of buildings, including multiple-family residences that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line.

(5) Any community water system with insufficient tier 1 and tier 2 sampling sites shall complete its sampling pool with "tier 3 sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A community water system with insufficient tier 1, tier 2, and tier 3 sampling sites shall complete its sampling pool with representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(6) The sampling sites selected for a non-transient noncommunity water system ("tier 1 sampling sites") shall consist of buildings that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line.

(7) A non-transient non-community water system, with insufficient tier 1 sites that meet the targeting criteria in paragraph (a)(6) of this section shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the non-transient non-community water system shall use representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(8) Any water system whose distribution system contains lead service lines shall draw 50 percent of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50 percent of the samples from sites served by a lead service line. A water system that cannot identify a sufficient number of sampling sites served by a lead service line shall collect first-draw samples from all of the sites identified as being served by such lines.

(b) *Sample collection methods.* (1) All tap samples for lead and copper collected in accordance with this subpart, with the exception of lead service line samples collected under §141.84(c) and samples collected under paragraph (b)(5) of this section, shall be first-draw samples.

(2) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours. First-draw samples from residential housing shall be collected from the cold water kitchen tap or bathroom sink tap. First-draw samples from a nonresidential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to paragraph (b)(5) of this section shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. First-draw samples may be collected by the system or the system may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

(3) Each service line sample shall be one liter in volume and have stood motionless in the lead service line for at least six hours. Lead service line samples shall be collected in one of the following three ways:

(i) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;

(ii) Tapping directly into the lead service line; or

(iii) If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(4) A water system shall collect each first draw tap sample from the same sampling site from which it collected a previous sample. If, for any reason, the water system cannot gain entry to a sampling site in order to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria, and is within reasonable proximity of the original site.

(5) A non-transient non-community water system, or a community water system that meets the criteria of §141.85(b)(7), that does not have enough taps that can supply first-draw samples, as defined in §141.2, may apply to the State in writing to substitute non-first-draw samples. Such systems must collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The State has the discretion to waive the requirement for prior State approval of non-first-draw sample sites selected by the system, either through State regulation or written notification to the system.

(c) *Number of samples.* Water systems shall collect at least one sample during each monitoring period specified in paragraph (d) of this section from the number of sites listed in the first column ("standard monitoring") of the table in this paragraph. A system conducting reduced monitoring under paragraph (d)(4) of this section shall collect at least one sample from the number of sites specified in the second column ("reduced monitoring") of the table in this paragraph during each monitoring period specified in paragraph (d)(4) of this section. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps, that can be used for human consumption meeting the sample site criteria of paragraph (a) of this section to reach the required number of sample sites listed in paragraph (c) of this section, must collect at least one sample from each tap and then must collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively the State may allow these public water systems to collect a number of samples less than the number of sites specified in paragraph (c) of this section, provided that 100 percent of all taps that can be used for human consumption are sampled. The State must approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the State. States may specify sampling locations when a system is conducting reduced monitoring. The table is as follows:

System size (number of people served)	Number of sites (standard monitoring)	Number of sites (reduced monitoring)
>100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5

(d) *Timing of monitoring*—(1) *Initial tap sampling.* The first six-month monitoring period for small, medium-size and large systems shall begin on the following dates:

System size (No. people served)	First six-month monitoring period begins on
>50,000	January 1, 1992.
3,301 to 50,000	July 1, 1992.
≤3,300	July 1, 1993.

(i) All large systems shall monitor during two consecutive six-month periods.

(ii) All small and medium-size systems shall monitor during each six-month monitoring period until:

(A) The system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under §141.81, in which case the system shall continue monitoring in accordance with paragraph (d)(2) of this section, or

(B) The system meets the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with paragraph (d)(4) of this section.

(2) *Monitoring after installation of corrosion control and source water treatment.* (i) Any large system which installs optimal corrosion control treatment pursuant to §141.81(d)(4) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.81(d)(5).

(ii) Any small or medium-size system which installs optimal corrosion control treatment pursuant to §141.81(e)(5) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.81(e)(6).

(iii) Any system which installs source water treatment pursuant to §141.83(a)(3) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.83(a)(4).

(3) *Monitoring after State specifies water quality parameter values for optimal corrosion control.* After the State specifies the values for water quality control parameters under §141.82(f), the system shall monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the State specifies the optimal values under §141.82(f).

(4) *Reduced monitoring.* (i) A small or medium-size water system that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the number of samples in accordance with

paragraph (c) of this section, and reduce the frequency of sampling to once per year. A small or medium water system collecting fewer than five samples as specified in paragraph (c) of this section, that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. In no case can the system reduce the number of samples required below the minimum of one sample per available tap. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(ii) Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and reduce the number of lead and copper samples in accordance with paragraph (c) of this section if it receives written approval from the State. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with §141.90, and shall notify the system in writing when it determines the system is eligible to commence reduced monitoring pursuant to this paragraph. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iii) A small or medium-size water system that meets the lead and copper action levels during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if it receives written approval from the State. Samples collected once every three years shall be collected no later than every third calendar year. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with §141.90, and shall notify the system in writing when it determines the system is eligible to reduce the frequency of monitoring to once every three years. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iv) A water system that reduces the number and frequency of sampling shall collect these samples from representative sites included in the pool of targeted sampling sites identified in paragraph (a) of this section. Systems sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August, or September unless the State has approved a different sampling period in accordance with paragraph (d)(4)(iv)(A) of this section.

(A) The State, at its discretion, may approve a different period for conducting the lead and copper tap sampling for systems collecting a reduced number of samples. Such a period shall be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient non-community water system that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the State shall designate a period that represents a time of normal operation for the system. This sampling shall begin during the period approved or designated by the State in the calendar year immediately following the end of the second consecutive six-month monitoring period for systems initiating annual monitoring and during the three-year period following the end of the third consecutive calendar year of annual monitoring for systems initiating triennial monitoring.

(B) Systems monitoring annually, that have been collecting samples during the months of June through September and that receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section, must collect their next round of samples during a time period that ends no later than 21 months after the previous round of sampling. Systems monitoring triennially that have been collecting samples during the months of June through September, and receive State approval to alter the sampling collection period as per paragraph (d)(4)(iv)(A) of this section, must collect their next round of samples during a time period that ends no later than 45 months after the previous round of sampling. Subsequent rounds of sampling must be collected annually or triennially, as required by this section. Small systems with waivers, granted pursuant to paragraph (g) of this section, that have been collecting samples during the months of June through September and receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section must collect their next round of samples before the end of the 9-year period.

(v) Any water system that demonstrates for two consecutive 6-month monitoring periods that the tap water lead level computed under §141.80(c)(3) is less than or equal to 0.005 mg/L and the tap water copper level computed under §141.80(c)(3) is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with paragraph (c) of this section and reduce the frequency of sampling to once every three calendar years.

(vi)(A) A small or medium-size water system subject to reduced monitoring that exceeds the lead or copper action level shall resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section. Such a system shall also conduct water quality parameter monitoring in accordance with §141.87(b), (c) or (d) (as appropriate) during the monitoring period in which it exceeded the action level. Any such system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(i) of this section and/or may resume triennial monitoring for lead and copper at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section.

(B) Any water system subject to the reduced monitoring frequency that fails to meet the lead action level during any four-month monitoring period or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State under §141.82(f) for more than nine days in any six-month period specified in §141.87(d) shall conduct tap water sampling for lead and copper at the frequency specified in paragraph (d)(3) of this section, collect the number of samples specified for standard monitoring under paragraph (c) of this

section, and shall resume monitoring for water quality parameters within the distribution system in accordance with §141.87(d). This standard tap water sampling shall begin no later than the six-month period beginning January 1 of the calendar year following the lead action level exceedance or water quality parameter excursion. Such a system may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

(1) The system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(ii) of this section and the system has received written approval from the State that it is appropriate to resume reduced monitoring on an annual frequency. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(2) The system may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section, and the system has received written approval from the State that it is appropriate to resume triennial monitoring.

(3) The system may reduce the number of water quality parameter tap water samples required in accordance with §141.87(e)(1) and the frequency with which it collects such samples in accordance with §141.87(e)(2). Such a system may not resume triennial monitoring for water quality parameters at the tap until it demonstrates, in accordance with the requirements of §141.87(e)(2), that it has re-qualified for triennial monitoring.

(vii) Any water system subject to a reduced monitoring frequency under paragraph (d)(4) of this section shall notify the State in writing in accordance with §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State may require the system to resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

(e) *Additional monitoring by systems.* The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any determinations (i.e., calculating the 90th percentile lead or copper level) under this subpart.

(f) *Invalidation of lead or copper tap water samples.* A sample invalidated under this paragraph does not count toward determining lead or copper 90th percentile levels under §141.80(c)(3) or toward meeting the minimum monitoring requirements of paragraph (c) of this section.

(1) The State may invalidate a lead or copper tap water sample at least if one of the following conditions is met.

(i) The laboratory establishes that improper sample analysis caused erroneous results.

(ii) The State determines that the sample was taken from a site that did not meet the site selection criteria of this section.

(iii) The sample container was damaged in transit.

(iv) There is substantial reason to believe that the sample was subject to tampering.

(2) The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(3) To invalidate a sample under paragraph (f)(1) of this section, the decision and the rationale for the decision must be documented in writing. States may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(4) The water system must collect replacement samples for any samples invalidated under this section if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of paragraph (c) of this section. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the monitoring period.

(g) *Monitoring waivers for small systems.* Any small system that meets the criteria of this paragraph may apply to the State to reduce the frequency of monitoring for lead and copper under this section to once every nine years (i.e., a "full waiver") if it meets all of the materials criteria specified in paragraph (g)(1) of this section and all of the monitoring criteria specified in paragraph (g)(2) of this section. If State regulations permit, any small system that meets the criteria in paragraphs (g)(1) and (2) of this section only for lead, or only for copper, may apply to the State for a waiver to reduce the frequency of tap water monitoring to once every nine years for that contaminant only (i.e., a "partial waiver").

(1) *Materials criteria.* The system must demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials, as those terms are defined in this paragraph, as follows:

(i) *Lead.* To qualify for a full waiver, or a waiver of the tap water monitoring requirements for lead (i.e., a "lead

waiver”), the water system must provide certification and supporting documentation to the State that the system is free of all lead-containing materials, as follows:

(A) It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and

(B) It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the specifications of any standard established pursuant to 42 U.S.C. 300g-6(e) (SDWA section 1417(e)).

(ii) *Copper*. To qualify for a full waiver, or a waiver of the tap water monitoring requirements for copper (*i.e.*, a “copper waiver”), the water system must provide certification and supporting documentation to the State that the system contains no copper pipes or copper service lines.

(2) *Monitoring criteria for waiver issuance*. The system must have completed at least one 6-month round of standard tap water monitoring for lead and copper at sites approved by the State and from the number of sites required by paragraph (c) of this section and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the system became free of all lead-containing and/or copper-containing materials, as appropriate, meet the following criteria.

(i) *Lead levels*. To qualify for a full waiver, or a lead waiver, the system must demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

(ii) *Copper levels*. To qualify for a full waiver, or a copper waiver, the system must demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

(3) *State approval of waiver application*. The State shall notify the system of its waiver determination, in writing, setting forth the basis of its decision and any condition of the waiver. As a condition of the waiver, the State may require the system to perform specific activities (e.g., limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver) to avoid the risk of lead or copper concentration of concern in tap water. The small system must continue monitoring for lead and copper at the tap as required by paragraphs (d)(1) through (d)(4) of this section, as appropriate, until it receives written notification from the State that the waiver has been approved.

(4) *Monitoring frequency for systems with waivers*. (i) A system with a full waiver must conduct tap water monitoring for lead and copper in accordance with paragraph (d)(4)(iv) of this section at the reduced number of sampling sites identified in paragraph (c) of this section at least once every nine years and provide the materials certification specified in paragraph (g)(1) of this section for both lead and copper to the State along with the monitoring results. Samples collected every nine years shall be collected no later than every ninth calendar year.

(ii) A system with a partial waiver must conduct tap water monitoring for the waived contaminant in accordance with paragraph (d)(4)(iv) of this section at the reduced number of sampling sites specified in paragraph (c) of this section at least once every nine years and provide the materials certification specified in paragraph (g)(1) of this section pertaining to the waived contaminant along with the monitoring results. Such a system also must continue to monitor for the non-waived contaminant in accordance with requirements of paragraph (d)(1) through (d)(4) of this section, as appropriate.

(iii) Any water system with a full or partial waiver shall notify the State in writing in accordance with §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source, as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State has the authority to require the system to add or modify waiver conditions (e.g., require recertification that the system is free of lead-containing and/or copper-containing materials, require additional round(s) of monitoring), if it deems such modifications are necessary to address treatment or source water changes at the system.

(iv) If a system with a full or partial waiver becomes aware that it is no longer free of lead-containing or copper-containing materials, as appropriate, (e.g., as a result of new construction or repairs), the system shall notify the State in writing no later than 60 days after becoming aware of such a change.

(5) *Continued eligibility*. If the system continues to satisfy the requirements of paragraph (g)(4) of this section, the waiver will be renewed automatically, unless any of the conditions listed in paragraph (g)(5)(i) through (g)(5)(iii) of this section occurs. A system whose waiver has been revoked may re-apply for a waiver at such time as it again meets the appropriate materials and monitoring criteria of paragraphs (g)(1) and (g)(2) of this section.

(i) A system with a full waiver or a lead waiver no longer satisfies the materials criteria of paragraph (g)(1)(i) of this section or has a 90th percentile lead level greater than 0.005 mg/L.

(ii) A system with a full waiver or a copper waiver no longer satisfies the materials criteria of paragraph (g)(1)(ii) of this section or has a 90th percentile copper level greater than 0.65 mg/L.

(iii) The State notifies the system, in writing, that the waiver has been revoked, setting forth the basis of its decision.

(6) *Requirements following waiver revocation*. A system whose full or partial waiver has been revoked by the State is subject to the corrosion control treatment and lead and copper tap water monitoring requirements, as follows:

(i) If the system exceeds the lead and/or copper action level, the system must implement corrosion control treatment in accordance with the deadlines specified in §141.81(e), and any other applicable requirements of this subpart.

(ii) If the system meets both the lead and the copper action level, the system must monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sample sites specified in paragraph (c) of this section.

(7) *Pre-existing waivers.* Small system waivers approved by the State in writing prior to April 11, 2000 shall remain in effect under the following conditions:

(i) If the system has demonstrated that it is both free of lead-containing and copper-containing materials, as required by paragraph (g)(1) of this section and that its 90th percentile lead levels and 90th percentile copper levels meet the criteria of paragraph (g)(2) of this section, the waiver remains in effect so long as the system continues to meet the waiver eligibility criteria of paragraph (g)(5) of this section. The first round of tap water monitoring conducted pursuant to paragraph (g)(4) of this section shall be completed no later than nine years after the last time the system has monitored for lead and copper at the tap.

(ii) If the system has met the materials criteria of paragraph (g)(1) of this section but has not met the monitoring criteria of paragraph (g)(2) of this section, the system shall conduct a round of monitoring for lead and copper at the tap demonstrating that it meets the criteria of paragraph (g)(2) of this section no later than September 30, 2000. Thereafter, the waiver shall remain in effect as long as the system meets the continued eligibility criteria of paragraph (g)(5) of this section. The first round of tap water monitoring conducted pursuant to paragraph (g)(4) of this section shall be completed no later than nine years after the round of monitoring conducted pursuant to paragraph (g)(2) of this section.

[56 FR 26548, June 7, 1991; 56 FR 32113, July 15, 1991; 57 FR 28788, June 29, 1992; as amended at 65 FR 2007, Jan. 12, 2000; 72 FR 57817, Oct. 10, 2007]

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#### §141.87 Monitoring requirements for water quality parameters.

All large water systems, and all small- and medium-size systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in accordance with this section. The requirements of this section are summarized in the table at the end of this section.

(a) *General requirements—(1) Sample collection methods.* (i) Tap samples shall be representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. Tap sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under §141.86(a). [Note: Systems may find it convenient to conduct tap sampling for water quality parameters at sites used for coliform sampling under 40 CFR 141.21.]

(ii) Samples collected at the entry point(s) to the distribution system shall be from locations representative of each source after treatment. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

(2) *Number of samples.* (i) Systems shall collect two tap samples for applicable water quality parameters during each monitoring period specified under paragraphs (b) through (e) of this section from the following number of sites.

System size (No. people served)	No. of sites for water quality parameters
>100,000	25
10,001-100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(ii) Except as provided in paragraph (c)(3) of this section, systems shall collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in paragraph (b) of this section. During each monitoring period specified in paragraphs (c)–(e) of this section, systems shall collect one sample for each applicable water quality parameter at each entry point to the distribution system.

(b) *Initial sampling* All large water systems shall measure the applicable water quality parameters as specified below at taps and at each entry point to the distribution system during each six-month monitoring period specified in §141.86(d)(1). All small and medium-size systems shall measure the applicable water quality parameters at the locations specified below during each six-month monitoring period specified in §141.86(d)(1) during which the system exceeds the lead or copper action level.

(1) At taps:

(i) pH;

(ii) Alkalinity;

(iii) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(iv) Silica, when an inhibitor containing a silicate compound is used;

- (v) Calcium;
- (vi) Conductivity; and
- (vii) Water temperature.

(2) At each entry point to the distribution system: all of the applicable parameters listed in paragraph (b)(1) of this section.

(c) *Monitoring after installation of corrosion control.* Any large system which installs optimal corrosion control treatment pursuant to §141.81(d)(4) shall measure the water quality parameters at the locations and frequencies specified below during each six-month monitoring period specified in §141.86(d)(2)(i). Any small or medium-size system which installs optimal corrosion control treatment shall conduct such monitoring during each six-month monitoring period specified in §141.86(d)(2)(ii) in which the system exceeds the lead or copper action level.

(1) At taps, two samples for:

- (i) pH;
- (ii) Alkalinity;
- (iii) Orthophosphate, when an inhibitor containing a phosphate compound is used;
- (iv) Silica, when an inhibitor containing a silicate compound is used;
- (v) Calcium, when calcium carbonate stabilization is used as part of corrosion control.

(2) Except as provided in paragraph (c)(3) of this section, at each entry point to the distribution system, at least one sample no less frequently than every two weeks (biweekly) for:

- (i) pH;
- (ii) When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration; and
- (iii) When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica (whichever is applicable).

(3) Any ground water system can limit entry point sampling described in paragraph (c)(2) of this section to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated ground water sources mixes with water from treated ground water sources, the system must monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. Prior to the start of any monitoring under this paragraph, the system shall provide to the State written information identifying the selected entry points and documentation, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(d) *Monitoring after State specifies water quality parameter values for optimal corrosion control.* After the State specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under §141.82(f), all large systems shall measure the applicable water quality parameters in accordance with paragraph (c) of this section and determine compliance with the requirements of §141.82(g) every six months with the first six-month period to begin on either January 1 or July 1, whichever comes first, after the State specifies the optimal values under §141.82(f). Any small or medium-size system shall conduct such monitoring during each six-month period specified in this paragraph in which the system exceeds the lead or copper action level. For any such small and medium-size system that is subject to a reduced monitoring frequency pursuant to §141.86(d)(4) at the time of the action level exceedance, the start of the applicable six-month monitoring period under this paragraph shall coincide with the start of the applicable monitoring period under §141.86(d)(4). Compliance with State-designated optimal water quality parameter values shall be determined as specified under §141.82(g).

(e) *Reduced monitoring.* (1) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under paragraph (d) of this section shall continue monitoring at the entry point(s) to the distribution system as specified in paragraph (c)(2) of this section. Such system may collect two tap samples for applicable water quality parameters from the following reduced number of sites during each six-month monitoring period.

System size (No. of people served)	Reduced No. of sites for water quality parameters
>100,000	10
10,001 to 100,000	7
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(2)(i) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during three consecutive years of monitoring may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in this paragraph (e)(1) of this section from every six months to annually. This sampling begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring

occurs. Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f), during three consecutive years of annual monitoring under this paragraph may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in paragraph (e)(1) of this section from annually to every three years. This sampling begins no later than the third calendar year following the end of the monitoring period in which the third consecutive year of monitoring occurs.

(ii) A water system may reduce the frequency with which it collects tap samples for applicable water quality parameters specified in paragraph (e)(1) of this section to every three years if it demonstrates during two consecutive monitoring periods that its tap water lead level at the 90th percentile is less than or equal to the PQL for lead specified in §141.89 (a)(1)(ii), that its tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L for copper in §141.80(c)(2), and that it also has maintained the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f). Monitoring conducted every three years shall be done no later than every third calendar year.

(3) A water system that conducts sampling annually shall collect these samples evenly throughout the year so as to reflect seasonal variability.

(4) Any water system subject to the reduced monitoring frequency that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State in §141.82(f) for more than nine days in any six-month period specified in §141.82(g) shall resume distribution system tap water sampling in accordance with the number and frequency requirements in paragraph (d) of this section. Such a system may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in paragraph (e)(1) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of that paragraph and/or may resume triennial monitoring for water quality parameters at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (e)(2)(i) or (e)(2)(ii) of this section.

(f) *Additional monitoring by systems.* The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any determinations (i.e., determining concentrations of water quality parameters) under this section or §141.82.

#### SUMMARY OF MONITORING REQUIREMENTS FOR WATER QUALITY PARAMETERS<sup>1</sup>

Monitoring period	Parameters <sup>2</sup>	Location	Frequency
Initial monitoring	pH, alkalinity, orthophosphate or silica <sup>3</sup> , calcium, conductivity, temperature	Taps and at entry point(s) to distribution system	Every 6 months.
After installation of corrosion control	pH, alkalinity, orthophosphate or silica <sup>3</sup> , calcium <sup>4</sup>	Taps	Every 6 months.
	pH, alkalinity, dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>5</sup>	Entry point(s) to distribution system <sup>6</sup>	No less frequently than every two weeks.
After State specifies parameter values for optimal corrosion control	pH, alkalinity, orthophosphate or silica <sup>3</sup> , calcium <sup>4</sup>	Taps	Every 6 months.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>5</sup>	Entry point(s) to distribution system <sup>6</sup>	No less frequently than every two weeks.
Reduced monitoring	pH, alkalinity, orthophosphate or silica <sup>3</sup> , calcium <sup>4</sup>	Taps	Every 6 months, annually <sup>7</sup> or every 3 years <sup>8</sup> ; reduced number of sites.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>5</sup>	Entry point(s) to distribution system <sup>6</sup>	No less frequently than every two weeks.

<sup>1</sup>Table is for illustrative purposes; consult the text of this section for precise regulatory requirements.

<sup>2</sup>Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.

<sup>3</sup>Orthophosphate must be measured only when an inhibitor containing a phosphate compound is used. Silica must be measured only when an inhibitor containing silicate compound is used.

<sup>4</sup>Calcium must be measured only when calcium carbonate stabilization is used as part of corrosion control.

<sup>5</sup>Inhibitor dosage rates and inhibitor residual concentrations (orthophosphate or silica) must be measured only when an inhibitor is used.

<sup>6</sup>Ground water systems may limit monitoring to representative locations throughout the system.



<sup>7</sup>Water systems may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during 3 consecutive years of monitoring.

<sup>8</sup>Water systems may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every 3 years if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during 3 consecutive years of annual monitoring. Water systems may accelerate to triennial monitoring for water quality parameters at the tap if they have maintained 90th percentile lead levels less than or equal to 0.005 mg/L, 90th percentile copper levels less than or equal to 0.65 mg/L, and the range of water quality parameters designated by the State under §141.82(f) as representing optimal corrosion control during two consecutive six-month monitoring periods.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 59 FR 33862, June 30, 1994; 65 FR 2010, Jan. 12, 2000; 72 FR 57818, Oct. 10, 2007]

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#### **§141.88 Monitoring requirements for lead and copper in source water.**

(a) *Sample location, collection methods, and number of samples.* (1) A water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with §141.86 shall collect lead and copper source water samples in accordance with the following requirements regarding sample location, number of samples, and collection methods:

(i) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). The system shall take one sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(ii) Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point). The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

NOTE TO PARAGRAPH (a)(1)(ii): For the purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

(iii) If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (*i.e.*, when water is representative of all sources being used).

(iv) The State may reduce the total number of samples which must be analyzed by allowing the use of compositing. Compositing of samples must be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that if the lead concentration in the composite sample is greater than or equal to 0.001 mg/L or the copper concentration is greater than or equal to 0.160 mg/L, then either:

(A) A follow-up sample shall be taken and analyzed within 14 days at each sampling point included in the composite; or

(B) If duplicates of or sufficient quantities from the original samples from each sampling point used in the composite are available, the system may use these instead of resampling.

(2) Where the results of sampling indicate an exceedance of maximum permissible source water levels established under §141.83(b)(4), the State may require that one additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point. If a State-required confirmation sample is taken for lead or copper, then the results of the initial and confirmation sample shall be averaged in determining compliance with the State-specified maximum permissible levels. Any sample value below the detection limit shall be considered to be zero. Any value above the detection limit but below the PQL shall either be considered as the measured value or be considered one-half the PQL.

(b) *Monitoring frequency after system exceeds tap water action level.* Any system which exceeds the lead or copper action level at the tap shall collect one source water sample from each entry point to the distribution system no later than six months after the end of the monitoring period during which the lead or copper action level was exceeded. For monitoring periods that are annual or less frequent, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or if the State has established an alternate monitoring period, the last day of that period.

(c) *Monitoring frequency after installation of source water treatment.* Any system which installs source water treatment pursuant to §141.83(a)(3) shall collect an additional source water sample from each entry point to the distribution system during two consecutive six-month monitoring periods by the deadline specified in §141.83(a)(4).

(d) *Monitoring frequency after State specifies maximum permissible source water levels or determines that source water treatment is not needed.* (1) A system shall monitor at the frequency specified below in cases where the State specifies maximum permissible source water levels under §141.83(b)(4) or determines that the system is not required to install source water treatment under §141.83(b)(2).

(i) A water system using only groundwater shall collect samples once during the three-year compliance period (as

that term is defined in §141.2) in effect when the applicable State determination under paragraph (d)(1) of this section is made. Such systems shall collect samples once during each subsequent compliance period. Triennial samples shall be collected every third calendar year.

(ii) A water system using surface water (or a combination of surface and ground water) shall collect samples once during each calendar year, the first annual monitoring period to begin during the year in which the applicable State determination is made under paragraph (d)(1) of this section.

(2) A system is not required to conduct source water sampling for lead and/or copper if the system meets the action level for the specific contaminant in tap water samples during the entire source water sampling period applicable to the system under paragraph (d)(1) (i) or (ii) of this section.

(e) *Reduced monitoring frequency.* (1) A water system using only ground water may reduce the monitoring frequency for lead and copper in source water to once during each nine-year compliance cycle (as that term is defined in §141.2), provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

(i) The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the State in §141.83(b)(4) during, at least three consecutive compliance periods under paragraph (d)(1) of this section; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive compliance periods in which sampling was conducted under paragraph (d)(1) of this section, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

(2) A water system using surface water (or a combination of surface water and ground water) may reduce the monitoring frequency in paragraph (d)(1) of this section to once during each nine-year compliance cycle (as that term is defined in §141.2) provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

(i) The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the State in §141.83(b)(4) for at least three consecutive years; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive years, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

(3) A water system that uses a new source of water is not eligible for reduced monitoring for lead and/or copper until concentrations in samples collected from the new source during three consecutive monitoring periods are below the maximum permissible lead and copper concentrations specified by the State in §141.83(a)(5).

[56 FR 26548, June 7, 1991; 57 FR 28788 and 28789, June 29, 1992, as amended at 65 FR 2012, Jan. 12, 2000; 72 FR 57819, Oct. 10, 2007]

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#### §141.89 Analytical methods.

(a) Analyses for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature shall be conducted with the methods in §141.23(k)(1).

(1) Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any person acceptable to the State. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by EPA or the State. To obtain certification to conduct analyses for lead and copper, laboratories must:

(i) Analyze Performance Evaluation samples, which include lead and copper, provided by or acceptable to EPA or the State at least once a year by each method for which the laboratory desires certification; and

(ii) Achieve quantitative acceptance limits as follows:

(A) For lead:  $\pm 30$  percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.005 mg/L. The Practical Quantitation Level, or PQL for lead is 0.005 mg/L.

(B) For Copper:  $\pm 10$  percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.050 mg/L. The Practical Quantitation Level, or PQL for copper is 0.050 mg/L.

(iii) Achieve the method detection limit for lead of 0.001 mg/L according to the procedures in appendix B of part 136 of this title. This need only be accomplished if the laboratory will be processing source water composite samples under §141.88(a)(1)(iv).

(iv) Be currently certified by EPA or the State to perform analyses to the specifications described in paragraph (a)(1) of this section.

(2) States have the authority to allow the use of previously collected monitoring data for purposes of monitoring, if the data were collected and analyzed in accordance with the requirements of this subpart.

(3) All lead and copper levels measured between the PQL and MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (a)(1)(ii) of this section. All levels below the lead and copper MDLs must be reported as zero.

(4) All copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half the PQL (0.025 mg/L). All levels below the copper MDL must be reported as zero.

(b) [Reserved]

[56 FR 26548, June 7, 1991, as amended at 57 FR 28789, June 29, 1992; 57 FR 31847, July 17, 1992; 59 FR 33863, June 30, 1994; 59 FR 62470, Dec. 5, 1994; 64 FR 67466, Dec. 1, 1999; 65 FR 2012, Jan. 12, 2000; 72 FR 57819, Oct. 10, 2007]

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#### **§141.90 Reporting requirements.**

All water systems shall report all of the following information to the State in accordance with this section:

(a) *Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring.*

(1) Except as provided in paragraph (a)(1)(viii) of this section, a water system shall report the information specified below for all tap water samples specified in §141.86 and for all water quality parameter samples specified in §141.87 within the first 10 days following the end of each applicable monitoring period specified in §141.86 and §141.87 (*i.e.*, every six months, annually, every 3 years, or every 9 years). For monitoring periods with a duration less than six months, the end of the monitoring period is the last date samples can be collected during that period as specified in §§141.86 and 141.87.

(i) The results of all tap samples for lead and copper including the location of each site and the criteria under §141.86(a) (3), (4), (5), (6), and/or (7) under which the site was selected for the system's sampling pool;

(ii) Documentation for each tap water lead or copper sample for which the water system requests invalidation pursuant to §141.86(f)(2);

(iii) [Reserved]

(iv) The 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period (calculated in accordance with §141.80(c)(3)), unless the State calculates the system's 90th percentile lead and copper levels under paragraph (h) of this section;

(v) With the exception of initial tap sampling conducted pursuant to §141.86(d)(1), the system shall designate any site which was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed;

(vi) The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under §141.87 (b)-(e);

(vii) The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under §141.87 (b)-(e);

(viii) A water system shall report the results of all water quality parameter samples collected under §141.87(c) through (f) during each six-month monitoring period specified in §141.87(d) within the first 10 days following the end of the monitoring period unless the State has specified a more frequent reporting requirement.

(2) For a non-transient non-community water system, or a community water system meeting the criteria of §141.85(b)(7), that does not have enough taps that can provide first-draw samples, the system must either:

(i) Provide written documentation to the State identifying standing times and locations for enough non-first-draw samples to make up its sampling pool under §141.86(b)(5) by the start of the first applicable monitoring period under §141.86(d) that commences after April 11, 2000, unless the State has waived prior State approval of non-first-draw sample sites selected by the system pursuant to §141.86(b)(5); or

(ii) If the State has waived prior approval of non-first-draw sample sites selected by the system, identify, in writing, each site that did not meet the six-hour minimum standing time and the length of standing time for that particular substitute sample collected pursuant to §141.86(b)(5) and include this information with the lead and copper tap sample results required to be submitted pursuant to paragraph (a)(1)(i) of this section.

(3) At a time specified by the State, or if no specific time is designated by the State, then as early as possible prior to the addition of a new source or any long-term change in water treatment, a water system deemed to have optimized corrosion control under §141.81(b)(3), a water system subject to reduced monitoring pursuant to §141.86(d)(4), or a water system subject to a monitoring waiver pursuant to §141.86(g), shall submit written documentation to the State describing the change or addition. The State must review and approve the addition of a new source or long-term change in treatment before it is implemented by the water system. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (*e.g.*, alum to ferric chloride), and switching corrosion inhibitor products (*e.g.*, orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

(4) Any small system applying for a monitoring waiver under §141.86(g), or subject to a waiver granted pursuant to §141.86(g)(3), shall provide the following information to the State in writing by the specified deadline:

(i) By the start of the first applicable monitoring period in §141.86(d), any small water system applying for a monitoring waiver shall provide the documentation required to demonstrate that it meets the waiver criteria of §§141.86(g)(1) and (2).

(ii) No later than nine years after the monitoring previously conducted pursuant to §141.86(g)(2) or §141.86(g)(4)(i), each small system desiring to maintain its monitoring waiver shall provide the information required by §§141.86(g)(4)(i) and (ii).

(iii) No later than 60 days after it becomes aware that it is no longer free of lead-containing and/or copper-containing material, as appropriate, each small system with a monitoring waiver shall provide written notification to the State, setting forth the circumstances resulting in the lead-containing and/or copper-containing materials being introduced into the system and what corrective action, if any, the system plans to remove these materials.

(iv) By October 10, 2000, any small system with a waiver granted prior to April 11, 2000 and that has not previously met the requirements of §141.86(g)(2) shall provide the information required by that paragraph.

(5) Each ground water system that limits water quality parameter monitoring to a subset of entry points under §141.87(c)(3) shall provide, by the commencement of such monitoring, written correspondence to the State that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(b) *Source water monitoring reporting requirements.* (1) A water system shall report the sampling results for all source water samples collected in accordance with §141.88 within the first 10 days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle) specified in §141.88.

(2) With the exception of the first round of source water sampling conducted pursuant to §141.88(b), the system shall specify any site which was not sampled during previous monitoring periods, and include an explanation of why the sampling point has changed.

(c) *Corrosion control treatment reporting requirements.* By the applicable dates under §141.81, systems shall report the following information:

(1) For systems demonstrating that they have already optimized corrosion control, information required in §141.81(b) (2) or (3).

(2) For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment under §141.82(a).

(3) For systems required to evaluate the effectiveness of corrosion control treatments under §141.82(c), the information required by that paragraph.

(4) For systems required to install optimal corrosion control designated by the State under §141.82(d), a letter certifying that the system has completed installing that treatment.

(d) *Source water treatment reporting requirements.* By the applicable dates in §141.83, systems shall provide the following information to the State:

(1) If required under §141.83(b)(1), their recommendation regarding source water treatment;

(2) For systems required to install source water treatment under §141.83(b)(2), a letter certifying that the system has completed installing the treatment designated by the State within 24 months after the State designated the treatment.

(e) *Lead service line replacement reporting requirements.* Systems shall report the following information to the State to demonstrate compliance with the requirements of §141.84:

(1) No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in §141.84(a), the system must submit written documentation to the State of the material evaluation conducted as required in §141.86(a), identify the initial number of lead service lines in its distribution system at the time the system exceeds the lead action level, and provide the system's schedule for annually replacing at least 7 percent of the initial number of lead service lines in its distribution system.

(2) No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in §141.84(a), and every 12 months thereafter, the system shall demonstrate to the State in writing that the system has either:

(i) Replaced in the previous 12 months at least 7 percent of the initial lead service lines (or a greater number of lines specified by the State under §141.84(e)) in its distribution system, or

(ii) Conducted sampling which demonstrates that the lead concentration in all service line samples from an individual line(s), taken pursuant to §141.86(b)(3), is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced and/or which meet the criteria in §141.84(c) shall equal at least 7 percent of the initial number of lead lines identified under paragraph (e)(1) of this section (or the percentage specified by the State under §141.84(e)).

(3) The annual letter submitted to the State under paragraph (e)(2) of this section shall contain the following information:

(i) The number of lead service lines scheduled to be replaced during the previous year of the system's replacement schedule;

(ii) The number and location of each lead service line replaced during the previous year of the system's replacement schedule;

(iii) If measured, the water lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.

(4) Any system which collects lead service line samples following partial lead service line replacement required by §141.84 shall report the results to the State within the first ten days of the month following the month in which the system receives the laboratory results, or as specified by the State. States, at their discretion may eliminate this requirement to report these monitoring results. Systems shall also report any additional information as specified by the State, and in a time and manner prescribed by the State, to verify that all partial lead service line replacement activities have taken place.

(f) *Public education program reporting requirements.* (1) Any water system that is subject to the public education requirements in §141.85 shall, within ten days after the end of each period in which the system is required to perform public education in accordance with §141.85(b), send written documentation to the State that contains:

(i) A demonstration that the system has delivered the public education materials that meet the content requirements in §141.85(a) and the delivery requirements in §141.85(b); and

(ii) A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials during the period in which the system was required to perform public education tasks.

(2) Unless required by the State, a system that previously has submitted the information required by paragraph (f)(1)(ii) of this section need not resubmit the information required by paragraph (f)(1)(ii) of this section, as long as there have been no changes in the distribution list and the system certifies that the public education materials were distributed to the same list submitted previously.

(3) No later than 3 months following the end of the monitoring period, each system must mail a sample copy of the consumer notification of tap results to the State along with a certification that the notification has been distributed in a manner consistent with the requirements of §141.85(d).

(g) *Reporting of additional monitoring data.* Any system which collects sampling data in addition to that required by this subpart shall report the results to the State within the first ten days following the end of the applicable monitoring period under §§141.86, 141.87 and 141.88 during which the samples are collected.

(h) *Reporting of 90th percentile lead and copper concentrations where the State calculates a system's 90th percentile concentrations.* A water system is not required to report the 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period, as required by paragraph (a)(1)(iv) of this section if:

(1) The State has previously notified the water system that it will calculate the water system's 90th percentile lead and copper concentrations, based on the lead and copper tap results submitted pursuant to paragraph (h)(2)(i) of this section; and has specified a date before the end of the applicable monitoring period by which the system must provide the results of lead and copper tap water samples;

(2) The system has provided the following information to the State by the date specified in paragraph (h)(1) of this section:

(i) The results of all tap samples for lead and copper including the location of each site and the criteria under §141.86(a)(3), (4), (5), (6), and/or (7) under which the site was selected for the system's sampling pool, pursuant to paragraph (a)(1)(i) of this section; and

(ii) An identification of sampling sites utilized during the current monitoring period that were not sampled during previous monitoring periods, and an explanation why sampling sites have changed; and

(3) The State has provided the results of the 90th percentile lead and copper calculations, in writing, to the water system before the end of the monitoring period.

[56 FR 26548, June 7, 1991; 57 FR 28789, June 29, 1992, as amended at 59 FR 33864, June 30, 1994; 65 FR 2012, Jan. 12, 2000; 72 FR 57819, Oct. 10, 2007]

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#### §141.91 Recordkeeping requirements.

Any system subject to the requirements of this subpart shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, State determinations, and any other information required by §§141.81 through 141.88. Each water system shall retain the records required by this section for no fewer than 12 years.

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CITY OF DETROIT  
WATER AND SEWERAGE DEPARTMENT  
OFFICE OF THE DIRECTOR

735 RANDOLPH STREET  
DETROIT, MICHIGAN 48226-2830  
WWW.DETROITMI.GOV

September 30, 2015

*Via email: [nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)  
and U.S. Mail*

Ms. Natasha L. Henderson, City Administrator  
City of Flint  
1101 S. Saginaw St.  
Flint, Michigan 48502

Dear Ms. Henderson:

Thank you for your inquiry regarding the possibility of reconnecting the City of Flint to the Detroit Water and Sewerage Department's (DWSD) Water Supply system. Director McCormick has asked me to respond to you and provide a brief outline of the basis for that reconnection. However, I want to again emphasize what Ms. McCormick has previously stated to your City Council on this issue: DWSD is willing to sit down and talk with the City of Flint without pre-condition, if that is mutually desirable.

I would be remiss if I did not point out that on June 12, 2015, the City of Detroit and the Great Lakes Water Authority (GLWA) executed a Lease Agreement that provides for the GLWA's operation of the Regional Water Supply System. At present, we are transitioning management of the system from DWSD to the GLWA while certain Conditions Precedent of the Lease Agreement are satisfied. We have made substantial progress towards satisfying these Conditions Precedent with a goal of having GLWA commence full system operations on or before January 1, 2016. I can assure you that, like DWSD, the GLWA is concerned with the challenges Flint's residents have faced in recent months, and will be willing to discuss service to your City.

That said, here is a likely list of issues that would need to be addressed:

1) Rates: In Sue McCormick's January 12, 2015 letter to Flint, she indicated that the rates Flint would pay for the remainder of the then current 2014-2015 Fiscal Year (FY) would be "the same rates Flint was paying as a terminated customer when it left the system but modified to include the 4% increase experienced by all other DWSD wholesale customers in 2014." As we are now in the 2015-16 FY, that offer must be modified to include an additional adjustment similar to that which was received by other customers. In this regard we propose that the rates be adjusted as follows:

a) Starting with the 2013-2014 FY terminated rate; and

b) Adding a 4% adjustment to that rate to account for the 2014-2015 FY increases; and

c) Adding an adjustment equal to the average Suburban Wholesale Charge Adjustment for the current 2015-2016 FY. This rate would remain in place until June 30, 2016, the end of the current 2015-2016 FY.



Ms. Natasha L. Henderson, City Administrator  
City of Flint  
September 30, 2015  
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d) Based upon the above considerations, the resulting rate structure is a fixed monthly rate of \$662,100 and a commodity rate of \$8.93/Mcf for the current 2015-2016 FY. Please note that this rate structure is designed to be applicable to incremental water sales over and above water sales to the Genesee County Drain Commission. Depending on how water is provided to the combined GCDC/Flint customer, alternative rate structures may be appropriate.

e) Additionally, DWSD recently changed its wholesale customer billing methodology as follows: Flint's calculated share of the FY 2016 Budget is allocated 60% to the Fixed Monthly Charge and 40% to the Commodity Charge, which is consistent with the adopted FY 2015-2016 water wholesale rates

f) In extending this proposal, our assumption is that the service provided is to Flint only and computations are based on data from our previous customer relationship.

g) It is anticipated that under the management of the GLWA, the rates for the 2016-2017 FY will be computed using the same methodology as applied to all other Water Supply System customers.

The proposed rate methodology is intended to ensure that Flint is treated fairly by using the average wholesale customer adjustment in the current Fiscal Year, and the same methodology as all other customers.

2) Term: DWSD understands that Flint's current long-term desire is to receive water service from the KWA. Under these circumstances, Flint would be expected to remain a DWSD customer from the time of reconnection until the time it begins to receive service from KWA. If Flint wishes to consider a longer term relationship with DWSD or GLWA, we would welcome that discussion.

3) Reconnection: As previously indicated by Ms. McCormick in her January 12, 2015, letter, DWSD will not charge an additional fee for Flint to reconnect to the DWSD Water System, and is prepared to immediately take those steps necessary on its end to facilitate a reconnection. Any expenses incurred would be billed at actual cost. Because DWSD lacks sufficient information on the status of the disconnection, we are unable to provide an estimate of those costs at this time. Nonetheless, we will work with you in good faith to develop an expedited plan for reconnection, and to develop a mutually agreed good faith estimate of the costs associated with that plan.

Thank you for raising this issue with us. We hope that this letter addresses the concerns you raised during your recent conversation with Ms. McCormick, and we sincerely appreciate your interest and the opportunity to serve Flint.





Ms. Natasha L. Henderson, City Administrator  
City of Flint  
September 30, 2015  
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Finally, we look forward to the opportunity to meet with you at your earliest convenience to discuss this letter, and how we may best assist Flint in serving its residents' needs. Please contact Ms. McCormick's office at (313) 224-4701 to arrange this meeting.

Best Regards,

William M. Wolfson  
Chief Administrative and Compliance Officer/General Counsel, DWSD  
Interim General Counsel, GLWA

**Thelen, Mary Beth (DEQ)**

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**From:** Saxton, Thomas (Treasury)  
**Sent:** Wednesday, October 07, 2015 2:43 PM  
**To:** Wyant, Dan (DEQ); Sygo, Jim (DEQ); Muchmore, Dennis (GOV); Roberts, John (DTMB); Baird, Richard (GOV); Lyon, Nick (DHHS); Hollins, Harvey (GOV)  
**Cc:** Workman, Wayne (TREASURY); Khouri, Nick (TREASURY); Duncan, Nancy (DTMB)  
**Subject:** FW: letter from John O'Brien  
**Attachments:** SKM\_C554e15100712200.pdf  
  
**Importance:** High

Here is the letter from the Genesee Co Drain Commission. My interpretation of the contents would be their estimate is \$13.2mm (vs the \$12mm discussed this morning).

They included their contract with the City. Sec 5.7 references prevailing rates the City would be charged; that is different than the rates reflected in the \$13.2mm. So that contract may need to be modified.

They also raise some other items (under *Procedure to Activate Supply* – p.3) that may have cost implications.



GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

- DIVISION OF -

WATER & WASTE SERVICES

G-4610 BEECHER ROAD - FLINT, MICHIGAN 48532-2617

PHONE (810) 732-7870 - FAX (810) 732-9773

JEFFREY WRIGHT  
COMMISSIONER

## MEMORANDUM

DATE: October 7, 2015

TO: Wayne Workman, Deputy Director, Treasury Department  
Randall Byrne, State Administrative Manager

FROM: John F. O'Brien, P.E., Director

SUBJECT: Letter Dated September 30, 2015  
Wolfson to Henderson

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My staff and I have reviewed the letter referenced above and have prepared this quick memorandum to explain the economics concerns and ramifications of the temporary cessation of the Flint water treatment operations and the return to DWSD/GLWA supply.

This memorandum is broken down into three parts: economics, procedure and concerns.

### Economics

Prior to April 2014, Flint held a water contract with DWSD. Flint also had the franchise rights to DWSD water for Genesee County. Therefore, Genesee County received DWSD water via the Flint. The water rate was calculated on that joint demand. In 2013-2014, the allocated cost was \$25,303,062 or \$738,066 per month plus \$13.01 per mcf.

In 2013, DWSD terminated the Flint contract effective April 2014. The Flint chose to go to the Flint River as its source water until KWA water was made available. With the contract terminated, the franchise was terminated and the county had to go to DWSD for water because Flint could no longer supply DWSD water and the Flint River and the Flint water treatment plant does not have the capacity to serve both utilities.

DWSD established a new rate for GCDC that included significant non-contract and non-member charges to access the water. GCDC also acquired approximately 9 miles of water main pipe from the Flint. (The Detroit water meter at the county line between Lapeer and Genesee and the Flint water plant is approximately 11 miles into the county.) The pipeline is of no use to Flint under the Flint River supply or KWA supply scenario. As part of the purchase agreement, language was included for emergency reconnection for Flint to DWSD through this water line.

GCDC water rates with DWSD are as follows:

	Fixed Monthly	Commodity
July 2013 – April 2014 (Flint Contract)	\$346,863	\$13.01
May 2014 – June 2014	\$423,400	\$15.18
July 2014 – June 2015	\$1,149,400	\$3.89
July 2015 – Present	\$900,000	\$11.86

As you can see, the fixed monthly fees and commodity fees have had significant swings. This is because under the Flint contract, only 40% of revenue was fixed. GCDC went to 80% and are now 60% for the current billing period.

Upon reviewing DWSD's letter of September 2015, DWSD went back to the 2013-2014 rate, added 4% for FY 14-15 and added approximately 11.3% for FY 15-16. This would create a water revenue requirement for a combined Flint/Genesee supply. In Section 1 d) of the letter, they state they would subtract GCDC current payments from that volume, leaving the amount to be paid by Flint. Remember, GCDC is paying the non-contract/non-customer penalty charges.

The reported rate would be \$662,100 monthly fixed and \$8.93/mcf commodity. Based on 15 million gallons a day and a 30 day month, the monthly charge would be:

$$\$662,100 + 15,000,000 \text{ gal} \times 30 \text{ days} \times 1 \text{ mcf} / 7,480 \text{ gallons} \times \$8.93 / \text{mcf}$$

$$\$662,100 + \$537,232.62 = \$1,199,332.62 \text{ per month}$$

Flint, over the last two seasons, has seen periods of water flow in the 20 to 25 mgd range due to water main breaks. This period has lasted 2 to 3 months. What is the additional cost if the monthly average was 21 mgd?

$$6,000,000 \times 30 / 7,480 \times \$8.93 / \text{mcf} = \$214,893.04 \text{ per month}$$

The only way for DWSD to provide water to Flint is a common meter at the county line and flow through a county water main. As previously stated, the Flint and GCDC have a contract regarding this potential circumstance (see 5.7 attached).

Assuming the fixed rate by DWSD is correct, the cost with the current commodity would be:

$$\$662,100 + 15,000,000 \times 30 / 7,480 \times \$11.86 = \$1,375,602.67$$

And again, with water main breaks, the additional monthly cost would be \$285,401.00.

Paragraph 1 d) of the DWSD letter recognizes this issue in the last sentence: "Depending on how water is provided to the combined GCDC/Flint customer, alternative rate structures may be appropriate."

We can back into that alternate rate based on our knowledge of the DWSD rate structure. DWSD wants 60% of its revenue from fixed rate.

		Volume per month
GCDC fixed	\$900,000	49,428 mcf
Flint fixed	\$662,100	50,590 mcf
TOTAL	\$1,562,100	100,018 mcf

Total commodity required is \$1,041,400

Rate based on volume \$10.41 would be the alternative rate

The adjusted rate for Flint would then be:

50% of fixed rate plus \$10.41 per mcf

$\$781,050 + \$15,000,000 + 30 / 7,480 \times \$10.41 = \$1,407,320$

And again, at this rate, the water main break situation could add \$250,508 per month

Therefore, Flint's expected bill for DWSD supplied water for a nine month period with 2 months of high flow would be \$13,166,896.

#### **Procedure to Activate Supply**

1. Agreement with DWSD and common rate for joint GCDC/Flint water supply would be required. Agreement needs to include separate billings to Flint and GCDC, Flint to pay directly to DWSD based on meter readings at Baxter and Potter and Station 2 on Flint plant site. GCDC makes no representation to the water quality - that is between Flint and DWSD. The agreement needs a termination transfer protocol for Flint exiting and GCDC remaining.
2. Separate agreement with Flint: back up supply was anticipated on an emergency basis. Nine months to a year of service requires a more detailed agreement. Water outage due to line break and cost to repair, etc. The agreement needs a termination clause if Flint is still on DWSD when GCDC is ready to turn on its water treatment plant in the fall of 2017.
3. The 72-inch line will be required to be reactivated. This will require flushing, pressure testing, and BAC-T sampling.
4. Station 2 meter needs to be calibrated and GCDC will need access to control the valves and read the meters.
5. Flint needs to reactivate the Dort Reservoir.
6. Flint should perform a significant water flush of the distribution system just prior to the switch over.

#### **Flint Distribution System**

The TTHM and lead issues here arising due to the water quality at the residential tap: Everyone agrees that the water leaving the water plant is clean, clear, and lead-free. At the residential tap, it has been shown to contain lead, is often brown in color, and has an odor. These are all indications of problems in the distribution system. The distribution system was built for a population of 250,000 people and major industrial use. Current population is below 100,000 and there is limited industrial use.

If Flint does not continue to make improvements/modifications to the distribution system, the problem at the residential tap will continue.

### **Concerns**

Will the lead sampling protocols change based on Flint's switch back to DWSD?

What happens to water treatment plant personnel during this 9-month period? Will they be laid off or carried as an additional expense?

When Flint switches to KWA, will the staff be capable of treating the water or will the learning curve begin again?

### **What is the Desired Outcome?**

It is the understanding of GCDC that all of the current samples that have been compiled at the Flint Water Treatment Plant have all tested within EPA and MDEQ guidelines. The emergency appears to be in the distribution of the water, which includes lead service leads to several residences located throughout Flint and not in the treatment of the water. As the treated water leaving the Flint Water Treatment Plant is within EPA and MDEQ guidelines, GCDC is confused as to what the emergency is at this time or why Flint would need to purchase water from DWSD. *The quality of the water leaving the Flint Water Treatment Plant is as safe to drink as the water that would be transmitted by DWSD to Flint.*

Given the facts as they have been provided to GCDC, if DWSD begins to supply Flint with water via GCDC, the elevated lead levels will not immediately disappear and Flint will be paying an additional million dollars plus a month over what it is currently paying to provide the same clean potable water to its residents. Additionally, by Flint receiving water from DWSD via GCDC, Flint will not be performing corrosion control measures on the DWSD treated water. This is important because once Flint begins to treat the raw water provided by KWA, the lead issue may resurface and continue until the corrosion control measures that will need to be restarted take effect, which GCDC estimates may take up to eight (8) months to establish the necessary film to separate the distribution system from the supply water.

The DWSD letter purposely pits Flint against Genesee County customers by offering a lower rate to Flint than is currently being offered to GCDC. And the delivery point is the same.

These are our quick thoughts on the matter. As time progresses, we will have more time to understand the issues and most likely additional concerns will present themselves.

Should you have any questions, do not hesitate to contact this office at your convenience.

WATER TRANSMISSION MAIN

ACQUISITION AGREEMENT

BY AND BETWEEN

CITY OF FLINT

AND THE

GENESEE COUNTY DRAIN COMMISSIONER AS COUNTY AGENCY

DATED MAY 30, 2014

approval, clearance, waiver, order or authorization of any person, organization, or entity; and (iii) do not conflict with, or result in any breach of, or default or loss of any right under (or an event or circumstance that, with notice or the lapse of time, or both, would result in a default), or the creation of any encumbrance pursuant to, or cause or permit the acceleration prior to maturity of any amounts owing under any indenture, mortgage, deed of trust, lease or other agreement to which the County Agency is a party, which failure, violation, conflict or breach would, in the aggregate, materially hinder or impair the consummation of the transactions contemplated by this Agreement.

- 5.4 Litigation. As of the Execution Date, there is no action, suit or proceeding pending or threatened against or affecting the County Agency before any governmental entity in which there is a reasonable possibility of an adverse decision which could have a material adverse effect upon the ability of the County Agency to perform its obligations under this Agreement or which in any manner questions the validity of this Agreement.
- 5.5 Due Diligence and Inspection. The County Agency acknowledges that it is being afforded the opportunity to conduct due diligence and investigation with respect to the transaction contemplated by this Agreement. The County Agency represents and warrants that it has conducted any and all such legal, factual, and other examinations, inquiries, investigations, and inspections, including conducting any tests, studies and examinations, that it, in its sole discretion, has determined necessary to complete such due diligence inspection to determine that the subject matter of this Agreement is suitable for the County Agency's intended use.
- 5.6 Environmental Matters. The County Agency represents and warrants that it has conducted any and all such legal, factual, and other examinations, inquiries, investigations, and inspections, including conducting any tests, studies and examinations, that it, in its sole discretion, has determined necessary to complete such due diligence inspection to have full knowledge of the environmental condition of the subject matter of this Agreement. County Agency shall enter into this Agreement subject to any and all environmental conditions present upon the subject matter of this Agreement.
- 5.7 Emergency Water Supply. The County Agency warrants that it will provide, to the extent the Detroit Water and Sewerage Department has available capacity treated water through the water main that is the subject matter of this Agreement in an emergency situation to Flint until such time as the Karegnondi Water Authority Water Transmission Pipeline construction is completed (which is estimated to be completed by May 2017) and the Karegnondi Water Authority is providing raw water to its customers.

The emergency supply of treated water to the Flint by the County Agency during the construction of the Karegnondi Water Authority Water Transmission Pipeline shall be at the prevailing rate and any additional charges, fees, special charges, and penalties, as billed by the Detroit Water and Sewerage Department to the County Agency.

If Flint shall need an emergency water supply after the Karegnondi Water Authority Water Transmission Pipeline has been installed and is operational, the County Agency will provide, to the extent the County Agency has available capacity, treated water through the water main that is the subject matter of this Agreement in an emergency situation to Flint. The emergency supply of treated water to Flint by the County Agency after the Water



Transmission Pipeline has been installed and is operational, shall be at the prevailing rate and any additional charges, fees, special charges, and penalties, if applicable, as billed by the Detroit Water and Sewerage Department to the County Agency.

## ARTICLE 6 COVENANTS OF FLINT

Flint covenants and agrees with the County Agency as follows:

- 6.1 Operation and Maintenance of the Water Main until Closing. Between the Execution Date of this Agreement and the Effective Date of this Agreement, Flint shall:
  - a. Operate the Water Main in the ordinary course of business; and
  - b. Maintain all books and records relating to the operation of the Water Main in the ordinary course of business; and
  - c. Fix any known breaks or leaks in the Water Main, except those set forth on **Exhibit F**; and
  - c. Promptly notify the County Agency of any emergency or other change in the normal course relating to the Water Main (or communications indicating that the same may be contemplated).
- 6.2 Litigation and Claims. Flint shall promptly inform the County Agency in writing of any Claims of which Flint is or becomes aware that are or might reasonably be expected to become the subject of litigation affecting the Water Main or the transactions contemplated by this Agreement.
- 6.3 Notice of Changes. Flint shall inform the County Agency in writing if it becomes aware that any representation or warranty made by Flint in this Agreement has ceased to be accurate or if Flint becomes aware of the occurrence of any breach of any covenant or other agreement required by this Agreement to be performed or complied with by Flint.

## ARTICLE 7 COVENANTS OF THE COUNTY AGENCY

The County Agency hereby covenants and agrees with Flint as follows:

- 7.1 Cooperation. Subject to the terms and conditions of this Agreement, the County Agency shall cooperate with Flint to use its best efforts to secure all necessary consents, approvals, authorizations, exemptions and waivers from all persons and entities as shall be requested by Flint or required to be obtained in order to consummate the transactions contemplated hereby.
- 7.2 Litigation and Claims. The County Agency shall promptly inform Flint in writing of any claims (or communications indicating that the same may be contemplated) of which the County Agency is or becomes aware that are or might reasonably be expected.



JENNIFER M. GRANHOLM  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



STEVEN E. CHESTER  
DIRECTOR

April 21, 2004

Mr. Benjamin H. Grumbles, Acting Assistant Administrator  
United States Environmental Protection Agency  
Washington, DC 20460

Dear Mr. Grumbles:

Deputy(s)	<i>[Signature]</i>
Director's Office Staff	<i>[Signature]</i>
Division/Office Chief	<i>[Signature]</i>
Prepared by:	
Name	<i>Richard Benzie</i>
Division/Office	<i>WD</i>
Log Letter No.	<i>DIR 00302</i>
File No.	
<input type="checkbox"/> Delogged	

EQ 0110e (Rev. 1/2001)

SUBJECT: State Programs to Control Lead in School Drinking Water

Thank you for your letter of March 18, 2004, requesting information on efforts being taken by the Michigan Department of Environmental Quality (MDEQ) to control lead in drinking water at schools and day care facilities. The following information has been assembled by staff in our Water Division (WD) having the regulatory responsibility for public water systems.

The WD continues to actively implement the requirements of the Lead and Copper Rule (LCR) authorized by the 1986 amendments to the federal Safe Drinking Water Act, 1976 PA 399, as amended. In Michigan, we have approximately 900 schools and day care centers that meet the definition of a nontransient noncommunity (NTNC) public water system. All of these systems rely on groundwater as their source. Fortunately, groundwater in Michigan is not typically corrosive or conducive to significant lead leaching from water system components.

As specified by the LCR, routine monitoring for lead and copper has been and continues to be conducted in these NTNC systems. Our experience has shown lead levels to be acceptable in these schools and day care centers when samples have been correctly collected from actual drinking water taps. From 1999 to 2003, the MDEQ laboratory analyzed 14,207 lead samples from NTNC public water systems. Only 2.4 percent of these sample results exceeded the lead action level of 15 parts per billion (ppb). Over 94 percent of these results reported lead levels less than or equal to half the lead action level of 7.5 ppb, with 37 percent reporting lead as not detected. On the rare occasion that one of these NTNC systems exceeded the lead action level, the owners have typically eliminated exposure by supplying bottled water or removing the offending tap until a long-term solution has been instituted. Rarely have the elevated lead levels been attributed to a system-wide problem. In Michigan, it has been repeatedly demonstrated that elevated lead levels from drinking water taps in schools are diminished by fixture replacement. In the last 5 years, we have had only 10 action level exceedences reported from a total of 1,750 NTNC public water systems. Only two of these systems have had to install corrosion control treatment.

Mr. Benjamin H. Grumbles  
Page 2  
April 21, 2004

In your letter, you state that schools are only subject to the requirements of the LCR if they have their own water system. This statement implies there is no benefit to those schools served by community public water systems. The WD feels strongly that the LCR does provide a significant benefit to schools and day care centers that are served by community public water systems (CPWS). Despite limitations in these regulations that severely restrict CPWS from using schools and day care centers as sampling sites, proper implementation of this regulation should result in reduced lead exposure for all customers. For instance, schools and day care centers connected to CPWS serving more than 50,000 residents benefited from the LCR because these water systems have had to demonstrate and maintain optimal corrosion control. These large systems were required to reduce lead levels throughout their water system to the lowest levels possible. In addition, schools and day care centers connected to CPWS serving 50,000 or fewer residents have benefited from proper implementation of the LCR because these water systems have had to achieve and maintain compliance with the lead action level. Furthermore, any CPWS that exceeded a lead action level also had to provide public notification and public service announcements in accordance with and on a frequency specified by the LCR. Therefore, schools and day care centers in these systems could choose to provide an alternate drinking water source until compliance was achieved and lead levels were reduced in their CPWS.

Your letter also references the Lead Contamination Control Act (LCCA) of 1988, which recalled drinking water coolers with lead-lined water reservoir tanks and banned new drinking water coolers with lead parts. This law caused Michigan's state plumbing board to make changes in the construction code to ban lead materials in other drinking water system components as well. Items such as 50/50 lead-tin solder for household plumbing, lead packers and lead wool used for well screens, and brass fixtures having greater than 8 percent lead were among the items banned from future use in potable water systems.

In 1988, prior to the LCCA, NTNC schools in Michigan were informed of the requirement to provide public notice regarding the potential for lead in drinking water, and they were mailed an example notice to use. All Michigan schools supplied by CPWS were also mailed the same information with a recommendation that they provide similar public notice although it was not required by law.

In 1989, over 8,000 Michigan schools and day care centers were mailed information on the LCCA. We cited concerns about lead levels and recommended a sampling and flushing protocol be instituted at all taps used for consumption, not just the water coolers required by the LCCA. In addition, staff of the WD made presentations to state school business officials and to the environmental health association representing local health departments. Articles were also published in school and day care association newsletters.

Mr. Benjamin H. Grumbles  
Page 3  
April 21, 2004

In 1989, we also conducted a random telephone survey of 40 schools and 40 day care centers (both NTNC and those connected to another water system) regarding the LCCA. Seventy-five percent of the schools were aware of the LCCA requirements and 50 percent had performed some monitoring, while 40 percent of the day care centers were aware of the LCCA requirements, and about 20 percent had sampled.

In 1990, a second mailing to all 8,000 schools and day care centers was conducted, with updated information on the recall of water coolers as required by the LCCA and with the recommendations developed in Michigan on flushing drinking water outlets. In this letter, we also asked that any sample results be reported to us even though they were specifically not required to do so by the LCCA. About 30 of 500 school districts reported results from 720 "first draw" samples taken in over 200 buildings; 2.5 percent of these results exceeded the maximum contaminant level (MCL) of 50 ppb in effect at that time for lead, 8.6 percent exceeded 20 ppb, and 17.5 percent exceeded 10 ppb. It should be noted that all (104) flushed sample results reported lead levels less than 10 ppb. We also noted that the overall average levels in first draw samples collected from kitchen faucets were higher than levels from the targeted lead lined water coolers that were the focus of the LCCA. As a result of this data, state staff did pilot testing in three school districts and provided technical assistance to schools and day care centers. Follow-up sampling and investigations were also accomplished by state staff in other school districts.

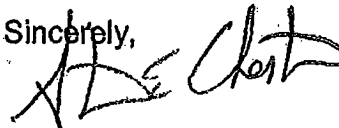
As you mentioned, the LCCA also established a technical assistance program to support state activities to reduce lead contamination in schools. The WD is aware of the United States Environmental Protection Agency (USEPA) technical assistance fact sheets, technical bulletins training seminars, and the publication, "Lead in School Drinking Water." As discussed, we conducted several mailings, made numerous presentations, conducted follow-up surveys, responded to requests for assistance, participated in several pilot tests to reduce lead levels, compiled data, conducted additional sampling, and responded to many telephone inquiries with appropriate technical assistance. All of these activities constitute our technical assistance program. However, no funding has ever been allocated to states for implementation of the LCCA. All of the activities performed by Michigan in response to the requirements of the LCCA were done so with resources diverted from other programs. The primary requirement of the LCCA was for schools that identified coolers on a list of those suspected to contain lead lining to repair, replace, remove, or sample to show that these coolers did not contribute to lead in the drinking water. If the schools did sample, they were also required to tell their customers that results were available. If schools had no coolers on the list, nothing further was required by the LCCA. Despite this limited application of the LCCA, Michigan has performed numerous activities beyond the scope specified in the LCCA without any federal funding.

Mr. Benjamin H. Grumbles  
Page 4  
April 21, 2004

Finally, you ask what the USEPA can do to further efforts in this voluntary program. We have several suggestions. First, we recommend that the USEPA consider allowing schools to be considered Tier 1 sampling sites in CPWS so that we can gain more information on possible lead exposure in schools. Allowing CPWS to use schools will afford them an opportunity to use sampling sites that are more accessible than private homes, more likely to be geographically distributed throughout their system, and likely to satisfy a large constituency (parents). From our experience, we also recommend that the USEPA consider a sampling protocol for schools that would determine if the fixtures at kitchen taps are a problem that could be simply resolved by replacement. The USEPA may also want to consider requiring the owner of these facilities to replace any remaining lead service lines supplying schools or day care centers.

In conclusion, we understand that the detection of elevated lead levels at customer taps in Washington, DC, has caused the USEPA to focus on this issue. However, the MDEQ wants to emphasize that despite the limitations in this law, proper implementation of the LCR accomplishes adequate reduction in lead levels. Failure to carry out some rule provisions in one case should not be cause for disparaging implementation across the country, or for unnecessary revamping of this regulation. If you need further information or assistance, please contact Mr. James K. Cleland, Assistant Division Chief, WD, at 517-241-1287, or you may contact me.

Sincerely,



Steven E. Chester  
Director  
517-373-7917

cc: Mr. Stanley F. Pruss, Deputy Director, MDEQ  
Mr. Jim Sygo, Deputy Director, MDEQ  
Ms. JoAnn Merrick, Senior Executive Assistant to the Director, MDEQ  
Mr. Andrew W. Hogarth, MDEQ  
Mr. Richard A. Powers, MDEQ  
Mr. James K. Cleland, MDEQ

**Summary of FY 2013-14 DWSD Cost Allocations to Flint Under Various Scenarios**  
**Flint Only**

	<u>Revenue Requirement</u>	<u>Rates and Charges</u>		
		<u>Fixed</u>	<u>Commodity</u>	<u>Avg Unit Cost</u>
1 <b>Status Quo (Flint Portion)</b>	12,574,900	379,304	13.01	20.39
2 <b>Suggested Cct (Flint Portion)</b>	11,281,100	351,661	12.06	19.27
3 <b>Change</b>	(1,293,800)	(27,643)	(0.95)	(1.12)
4 <b>% Change</b>	-10.3%	-7.3%	-7.3%	-5.5%
5 <b>Max Day Only</b>	9,904,300	294,542	10.87	16.91
6 <b>Change</b>	(1,376,800)	(57,119)	(1.19)	(2.36)
7 <b>% Change</b>	-13.9%	-19.4%	-10.9%	-14.0%
8 <b>Add CTA Line to BP</b>	10,093,100	310,271	10.87	17.23
9 <b>Change</b>	188,800	15,729	0.00	0.32
10 <b>% Change</b>	1.9%	5.1%	0.0%	1.9%
11 <b>CTA to BP / Flint only to FWTP</b>	12,446,300	506,371	10.87	21.25
12 <b>Change</b>	2,353,200	196,100	0.00	4.02
13 <b>% Change</b>	18.9%	38.7%	0.0%	18.9%
14 <b>Add CTA Line to FWTP</b>	10,191,200	318,450	10.87	17.40
15 <b>Change</b>	(2,255,100)	(187,921)	0.00	(3.85)
16 <b>% Change</b>	-22.1%	-59.0%	0.0%	-22.1%
17 <b>CTA to FWTP / Buy existing 72</b>	10,009,600	303,315	10.87	17.08
18 <b>Change</b>	(181,600)	(15,135)	0.00	(0.32)
19 <b>% Change</b>	-1.8%	-5.0%	0.0%	-1.9%
20 <b>Cumulative Change</b>	(2,565,300)	(75,989)	(2.14)	(3.31)
21 <b>Cumulative % Change</b>	-20.4%	-20.0%	-16.4%	-16.2%

	<u>Assumptions</u>			<u>DWSD Investment</u>	
	<u>Avg Day</u> <i>mgd</i>	<u>Max Day</u> <i>mgd</i>	<u>Peak Hour</u> <i>mgd</i>	<u>CTA</u> \$	<u>Flint Only</u> \$
1 <b>Status Quo</b>	24.6	45.6	47.7	0	0
2 <b>Suggested Contract</b>	23.4	40.6	42.4	0	0
3 <b>Max Day Only</b>	12.0	18.0	18.0	0	0
4 <b>Add CTA Line to BP</b>	12.0	18.0	18.0	62,290,800	0
5 <b>CTA to BP / Flint only to FWTP</b>	12.0	18.0	18.0	62,290,800	32,391,300
6 <b>Add CTA Line to FWTP</b>	12.0	18.0	18.0	94,682,100	0
7 <b>CTA to FWTP / Buy existing 72</b>	12.0	18.0	18.0	94,682,100	(2,500,000)

**TFG**

PRELIMINARY

THE FOSTER GROUP

3/8/13



**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

At the request of the Treasurer, Tucker, Young, Jackson, Tull, Inc. (TYJT) makes the following recommendation to the Department of Treasury concerning Flint's water supply alternatives. Based on the financial analysis performed of the various options presented by DWSD to continue treated water service to Flint compared to Flint being supplied by the new KWA untreated water system, TYJT believes that several of the options presented by DWSD are lower in cost currently and over the long run than the one offered by KWA. TYJT also believes that DWSD's most recent offer (subsequent to the submittal of our report) to build a smaller parallel water main from Imlay to Flint, funded by the entire DWSD base of customers, is the best solution offering the least cost alternative and the required redundancy by MDEQ.

Furthermore, since a majority of the KWA system has not been designed and none of the system has been constructed, there is an additional risk that the cost of the KWA system may actually be higher than estimated due to potential construction delays and unforeseen conditions. This risk to Flint could be substantial since the city is responsible for 30 percent of the KWA design and construction costs while still having to purchase water from DWSD during the construction period.

Finally, there are other issues that were identified in our report that may result in risks to Flint if it were to join KWA that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

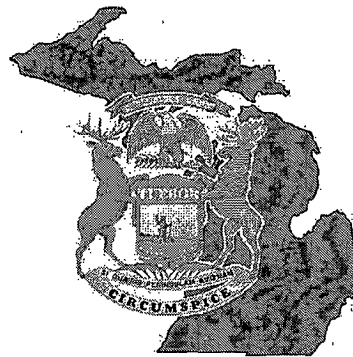
- DWSD's supply to Flint is via a 72-inch water main from Imlay City. This main also supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 million gallons. If Genesee and Flint move to KWA then the three remaining communities' consumption would most likely not be large enough to maintain fresh water in DWSD's pipeline (due to loss of chlorine residual). DWSD may consider shutting down the 72-inch line completely due to the water quality concerns, which would then create an additional burden for Imlay, Mayfield and GLCUA to finance treated water supplies.
- The KWA supply option is counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating from another water system is in contradiction to the program.
- There is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.
- Although Flint will be responsible for 30 percent of the construction cost, they will only have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs. Their position on the KWA Board will not provide them an ability to "control their own destiny," as they have stated to the Treasury.

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**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**  
**February 2013**

For Submittal to:  
**State of Michigan, Department of Treasury**



Submitted by:

**TY** TUCKER, YOUNG,  
**JB** JACKSON, TULL INC.

CONSULTING ENGINEERS-PLANNERS  
615 Griswold Suite 600  
Detroit, Michigan 48226  
(313)963-0812 FAX (313)963-2156



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## ***Appendices***

Appendices A – Meeting Minutes

Appendix B – Cost Worksheets

## ***1. INTRODUCTION***

Tucker, Young, Jackson, Tull, Inc. (TYJT), at the request of the State Treasurer performed an analysis of the water supply options being considered by the City of Flint. The City of Flint is presently supplied potable water from the Detroit Water and Sewerage Department (DWSD). This supply is from a single 72-inch water main that terminates at a master meter located at Potter and Baxter. Additionally, downstream of the DWSD master meter, Flint supplies its customer Genesee County. The City of Flint also operates a water treatment plant that uses the Flint River as its source of supply to provide back up and redundancy to the DWSD supply as required by MDEQ.

The Karegnondi Water Authority (KWA) is planning on constructing a raw water supply system that could provide Lake Huron water to the Flint Water Treatment Plant. Flint's existing plant would be upgraded to treat the new raw water source.

The State Treasurer has appointed an emergency financial manager for the City of Flint. As such the Treasurer has requested TYJT to provide an analysis of the water supply options to assist the Treasurer in determining any potential risk and the best course going forward for supplying potable water to the City of Flint.

### ***Report Organization***

The following sections of this report are described below:

Section 2 – The basis of the analysis is described in this section. The options include the KWA option and several options offered by DWSD.

Section 3 – A significant amount of information and data was collected including memorandums, reports, drawings, financial reports, and other documents. This section summarizes the information used in the analysis.

Section 4 – This section describes the evaluation of the cost of supply for the Flint options. The costs are comprised of the initial cost of operations plus the annual rate of escalation/inflation.

Section 5 – The evaluation process used to analyze the construction costs associated with the KWA supply system is described in this section. Additionally, the cost of financing the capital requirements is described.

Section 6 – This section presents the financial review of the options considered to supply potable water to Flint. A summary of these options is also provided.

Section 7 – In addition to the financial analysis other considerations were identified that should be considered in understanding the risks and determining the best option to supply Flint. They include items related to cost, redundancy and reliability, and Flint's ability to control their future cost of water supply.

## ***2. FLINT WATER SUPPLY OPTIONS***

Two water purveyor options were evaluated; the KWA water supply system and continued supply from DWSD. Both suppliers would provide water from Lake Huron as the source. The KWA system is a raw water supply, which means that the water would have to be treated by Flint before distributing the potable water to its customers. The DWSD supply is potable or "finished" water and would not need additional treatment.

Additionally, an option for the Flint WTP to supply the City of Flint without being supplied from either DWSD or KWA was initially considered. The preliminary investigation evaluated the cost associated with the required improvements to the plant and to the Flint River dam system. Although it appeared that this was a viable option, Flint in a meeting on December 20, 2012 with the Treasury, stated that the City did not want to pursue the option and it is no longer being considered.

### ***Karegnondi Water Authority (KWA) Lake Huron Water Supply***

The KWA water supply system schematic is shown in Figure 2-1. The system is comprised of an intake in Lake Huron that supplies water to the Lake Huron Pump Station (LHPS). The LHPS lifts the water and pumps it through an approximately 22 mile long 60-inch pipeline. The pipeline terminates at a 5 MG reservoir and is then pumped from the Intermediate Pump Station (IPS) through approximately 26 miles of 60-inch and 18 miles of 30-inch pipeline to the existing Flint WTP. Downstream of the IPS, approximately half way to the Flint WTP, the 60-inch line would also supply a new Genesee County WTP.

The raw water transmission system has a 60 MGD capacity and is sized to deliver a maximum of 18 MGD to the Flint WTP with an average day supply of 12 MGD. Improvements at the Flint WTP would also be required to treat the lake water as the plant is currently designed to treat the Flint River water.

The term of the KWA contract for Flint is 40 years.

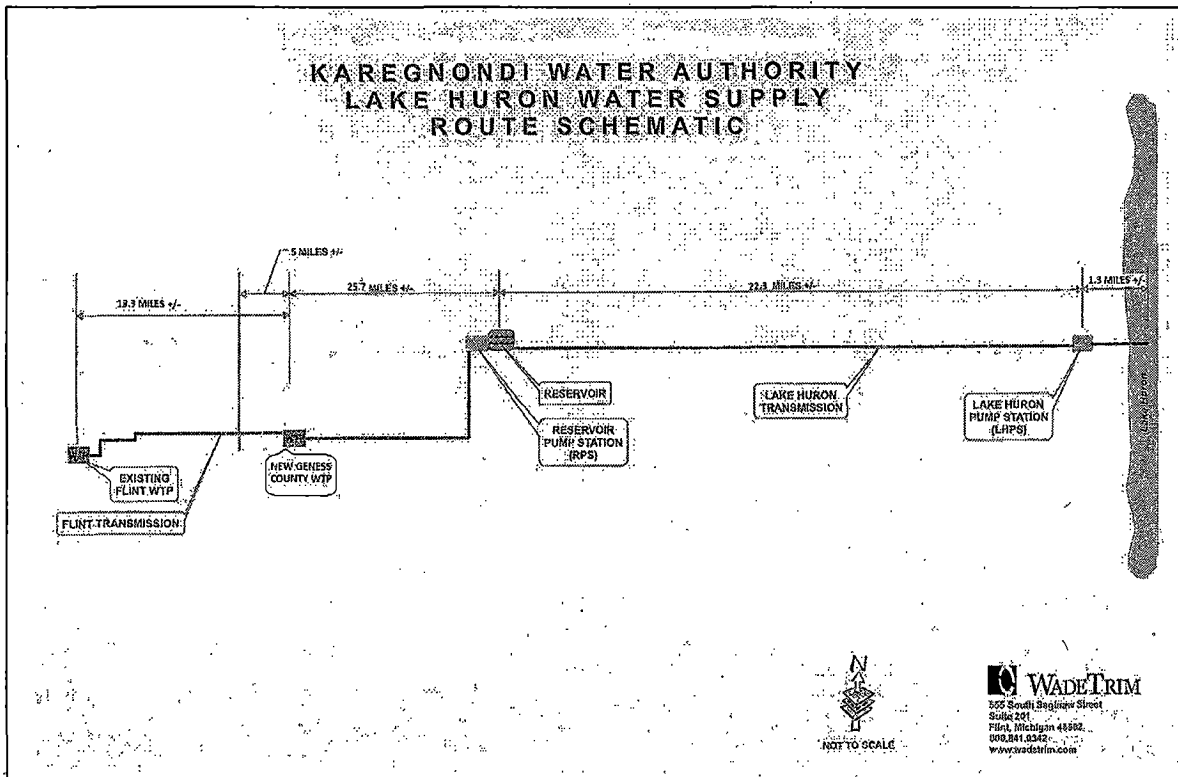
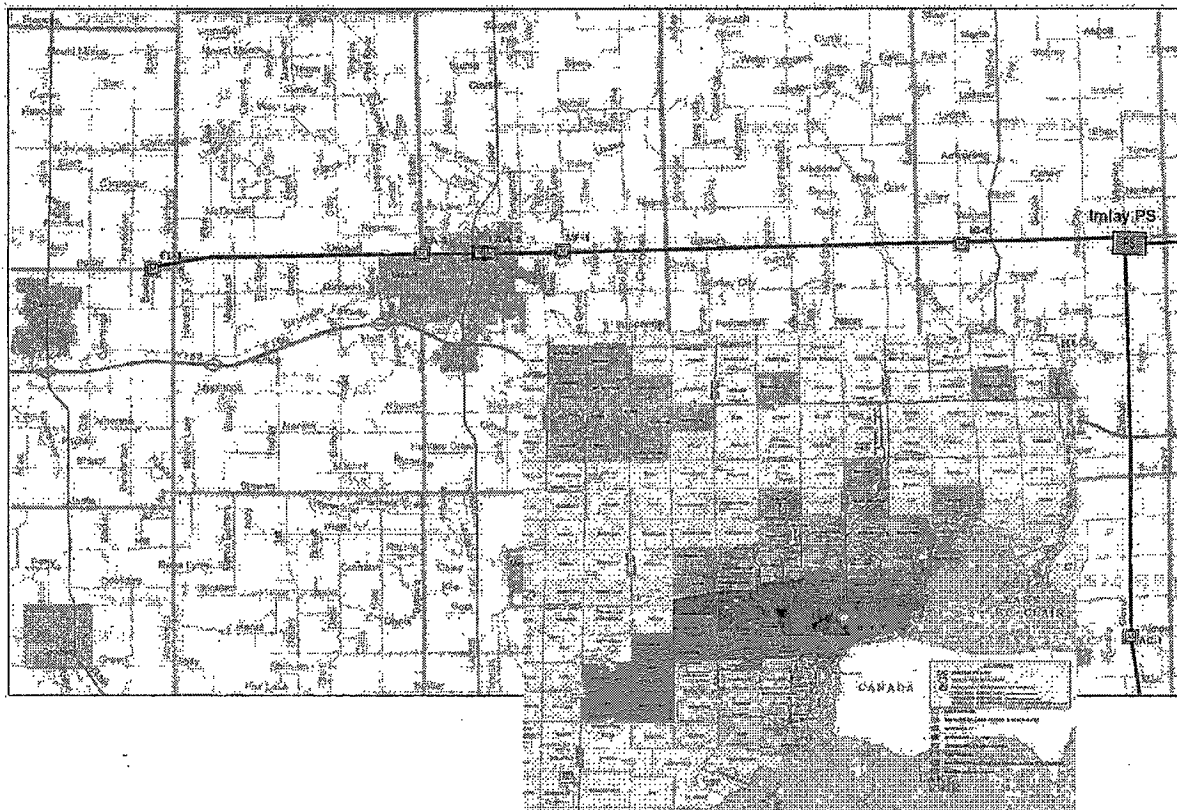


Figure 2-1: KWA Raw Water System

### *DWSD Water System*

The DWSD system schematic is shown in Figure 2-2. Flint is currently supplied by DWSD at Master Meter FL-1, located at Potter and Baxter. Flint typically gets its water from the Lake Huron WTP, located in Fort Gratiot, Michigan; near the Lake Huron shoreline. Water is treated and pumped at the Lake Huron WTP and supplied through a 120-inch pipeline to an intermediate pump station called the Imlay Pump Station. The Imlay Pump Station has 20 MG of reservoir capacity. Depending on the time of year and the DWSD system demand, water is either bypassed directly to Flint or it is re-pumped at Imlay. It should be noted that the DWSD supply to Flint is part of a very large water system and during emergencies or outages water can be supplied from the south up to Flint in lieu of the Lake Huron facility.



**Figure 2-2: DWSD Water System**

The pipeline from Imlay to FL-1 is a 72-inch pipeline. It has been estimated that the 72-inch line serving Flint has a capacity in excess of 90 MGD.

DWSD has presented several contractual options to Flint and all of them are based on Flint signing a new 30 year contract. The options shown in Table 2-1 are based on two different supply points; one at the current master meter location FL-1 at Potter and Baxter (P&B) and the other at the location of the Imlay Pump Station. The reason for the varying options is to provide a lower water rate at the Imlay Station, since the DWSD rate formula is based on distance and elevation factors related to the supply location.

The rates are also dependent on the maximum amount of water DWSD supplies. As example, if DWSD supplies a maximum day demand of 18 MGD that would equal the entire amount of water required by Flint.

For the options less than the maximum of 18 MGD means that the Flint WTP would supplement the difference by supplying water treated from the Flint River. These options are known as "blending" and would allow for Flint to blend two sources of water to supply its customers; the Flint River using the Flint WTP and Lake Huron from DWSD system.

Description	Average Day Demand
18 MGD Maximum Day Customer – FL-1	12 MGD
12 MGD Maximum Day Customer – FL-1	8 MGD
8 MGD Maximum Day Customer – FL-1	8 MGD
12 MGD Maximum Day Customer – Imlay	12 MGD
8 MGD Maximum Day Customer – Imlay	12 MGD

**Table 2-1: DWSD Supply Options**

### ***3. DATA COLLECTION***

During the course of the investigation several documents were used to perform the analysis. The names of the documents are listed below for reference.

#### **KWA and Flint**

- Preliminary Engineering Report, Lake Huron Water Supply Karegnondi Water Authority, September 2009;
- Analysis of the Flint River as a Permanent Water Supply for the City of Flint, July 2011;
- Cost Comparison, KWA vs. DWSD, Letter to Mr. Kurtz, October 31, 2012;
- Lake Huron Supply Study, KWA, Appendix 20, October 2012 Preliminary Report Update, Final Report (DRAFT), October 4, 2012;
- Articles of Incorporation of Karegnondi Water Authority, endorsed in 2010;
- Karegnondi Water Authority Bylaws, October 26, 2010;
- KWA Raw Water Supply Contract;
- Flint WTP Statement of Revenues and Expenditures 09' – 12';
- GCDC Division of Water and Waste Services Financial Statements 03' – 11'; and
- Assorted emails with further clarification of questions and documentation.

#### **DWSD**

- Historical Rates and Charges to Flint 04' – 13';
- Historical Rates and Charges to Flint with Hypothetical Model Contract 10' – 13';
- 2013 Rates and Charges for the following options:
  - 18 MGD Maximum Day Customer at FL-1;
  - 12 MGD Maximum Day Customer at FL-1 (Flint blending\*);
  - 8 MGD Maximum Day Customer at FL-1 (Flint blending\*);
  - 12 MGD Maximum Day Customer at Imlay (Flint blending\*);
  - 8 MGD Maximum Day Customer at Imlay (Flint blending\*); and
- Assorted emails with further clarification of questions and documentation.



- \* Flint blending based on DWSD supplying two-thirds and Flint one-third of 12 MGD average day demand.

Two meetings were also held; one with DWSD and one with Flint and Genesee County representing KWA. The meetings were held on November 19, 2012 and November 20, 2012, respectively. Minutes from these meetings are included in Appendix A.

#### **4. COST OF SERVICE**

Information provided by DWSD, Flint, and representatives of the KWA were used in the cost of service evaluation. To evaluate the annual escalation/inflation rate over the planning period, the rate adjustment for DWSD was estimated based on the recent rate adjustment history. For the KWA system both the estimated cost of operations when the system begins supplying water and the annual rate adjustment or inflation was evaluated. The existing cost of operations and escalation for the Flint WTP was based on actual costs provided and then adjusted depending on the scenario considered. This section describes the evaluation process and the rates used in the analysis.

##### ***DWSD Water Supply***

The City of Flint has been a customer of DWSD since 1967. The Flint WTP has been maintained as a backup to the DWSD system. As indicated previously, several options were provided by DWSD depending on the type of service Flint was to select. The unit cost of water for each of these options is shown in Table 4-1. These rates are based on DWSD's FY13, which are current until July 2013.

Description	Average Day Demand (MGD)	Unit Rate (\$/MCF)
18 MGD Maximum Day Customer – FL-1	12	16.37
12 MGD Maximum Day Customer – FL-1	8	16.31
8 MGD Maximum Day Customer – FL-1	8	12.68
12 MGD Maximum Day Customer – Imlay	12	14.38
8 MGD Maximum Day Customer – Imlay	12	11.11

**Table 4-1: Cost of DWSD Supply Options**

To determine annual escalation rate, DWSD's last 10 years of history was used along with other large urban water systems in Michigan. The water systems used for benchmarking comparison were: Lansing, Grand Rapids, and Saginaw.

Table 4-2 identifies the annual and average rate of increase to Flint based on supplying water either to the current FL-1 at Potter and Baxter or Imlay. Note the last three years of the rates (FY 2011 through FY 2013) assumes that Flint's cost would be based on the new 30 year contract; FY 2011 being the first year that the new contract was available.

Fiscal Year	Average Unit Cost (\$/MCF)	Annual Change (%)
2004	11.06	
2005	10.24	-7.4
2006	10.56	3.1
2007	11.09	5.0
2008	11.35	2.3
2009	13.07	15.2
2010	11.73	-10.3
2011	13.89	18.4
2012	15.08	8.6
2013	16.24	7.7
Average		4.4%

From FL-1

Fiscal Year	Average Unit Cost (\$/MCF)	Annual Change (%)
2004	11.06	
2005	10.24	-7.4
2006	10.56	3.1
2007	11.09	5.0
2008	11.35	2.3
2009	13.07	15.2
2010	11.16	-14.6
2011	12.23	9.6
2012	13.28	8.6
2013	14.32	7.8
Average		2.9%

From Imlay

Table 4-2: Recent DWSD Water Rates

Audited financial reports were used to determine the rate of inflation associated with other three large municipal systems. The results are shown in Table 4-3.

Water Systems	Years Evaluated	Average Rate (%)
Lansing	05'-12'	4.6
Grand Rapids	04'-11'	1.6
Saginaw	04'-11'	7.0

**Table 4-3: O&M Inflation Rates of Other Large Water Systems**

Based on the information analyzed from DWSD and the other communities, it was determined that a fair annual rate of inflation for operations and maintenance cost for the analysis should be 4.4%. The 4.4% has historical significance from Flint's current water supplier and falls within the range of the other communities.

### ***KWA Water Supply***

The initial projected O&M cost for the KWA supply would be comprised of KWA's O&M costs as well as Flint's O&M costs. Because there was limited information provided, the initial estimated rate of \$1.50/MCF was used. This rate is based on information from the cost comparison analysis attached to the letter to Mr. Kurtz, dated October 31, 2012.

The KWA cost evaluation used an annual O&M inflation rate of 5%. To validate this rate a similar analysis to DWSD's operations and maintenance annual rate of inflation was used. First, in discussions with Flint and the Genesee County Drain Commission (GCDC), they believed that the annual rate of inflation for the new KWA system would be similar to the GCDC Water & Waste Services (WWS). Additionally, two large transmission systems were used to benchmark the inflation rates: the Southeastern Oakland County Water Authority (SOCWA) and the Ypsilanti Utility Community Authority (YUCA). Although both of these systems transmit finished water opposed to raw water, they were considered similar enough for comparison as they are comprised of only large water mains, pumping facilities and storage.

Once again audited financial statements were used to calculate the inflation rates. A summary of the findings are shown in Table 4-4. Based on the fact that the information analyzed showed a large difference between the two systems, it was determined that the KWA assumption of 5% was a good rate of inflation to use in the financial analysis. This rate is almost equally between the GCDC rate and the other two transmission systems.

Systems	Years Evaluated	Average Rate (%)
GCDC WWS	03' - 11'	10.5
SOCWA	04' - 12'	-
YUCA	04' - 12'	0.7

**Table 4-4: O&M Inflation Rates of Other Comparable Systems to KWA**

### ***Flint WTP***

The Flint WTP currently serves as a backup supply to the DWSD service to Flint. To maintain backup operations, the City of Flint operates the plant approximately 20 days each year. Flint indicated that the average production rate when they operate is 11 MGD.

For the blending options and the KWA supply considered, Flint would be required to operate its plant all year around. Therefore, their operating and maintenance costs were evaluated and adjusted to determine an annual cost associated with year-round operations.

The Flint WTP provided three years of operating costs for the assessment. Additionally, reports listed in Section 3 were also used as reference to determine both operating costs for the plant processing Flint River water (blending options) and Lake Huron raw water (KWA option).

Major cost centers were analyzed to estimate annual operation and maintenance. They included: labor, utilities, chemicals and residual management. In general, as recommended by the Flint plant staff, labor and overhead were increased from the current costs by two-thirds. Additionally, variable costs for power, chemicals and residual cost were increased to estimate full time treatment at the Flint WTP. Data from the KWA Preliminary Report and annual operating data for the Flint WTP (provided separately) were analyzed to make these forecasts.

The annual operating and maintenance costs developed for Flint WTP used are shown in Table 4-5.

Source of Supply	Average Daily Production (MGD)	Estimated Annual O&M Cost
Flint River (Blending with DWSD)	4	\$5,895,097
Lake Huron (Supplied by KWA)	12	\$7,913,118

**Table 4-5: FY 13 O&M Costs for Year-round Operations**

It was determined that a fair annual rate of inflation for operations and maintenance cost for the Flint WTP plant should be 4.51%. The 4.51% is an average of Lansing, Grand Rapids and Saginaw facilities.

## 5. CAPITAL REQUIREMENTS

Large capital investments would be required by Flint and GCDC to construct the KWA supply system. Furthermore, some of the options presented by DWSD (supply point from Imlay) would require the purchase by Flint of DWSD's 72-inch water main. Performing the financial analysis; therefore, required an analysis of the KWA construction cost estimate for the transmission system and Flint WTP improvements.

Revenue bonds were also identified as the source of financing the new supply system and associated improvements. This section describes the assumptions made and the interest used for financing the improvements.

### *KWA Supply System*

The most current cost estimate of the KWA system was presented in the document titled; Lake Huron Supply Study, KWA, Appendix 20, October 2012 Preliminary Report Update, Final Report (DRAFT), October 4, 2012. The cost of construction is estimated at \$272,421,558. Flint's portion would be 30% or \$81,726,467.

Due to the significance of this expenditure, a detailed review of the cost was performed and is presented in this section. The analysis was performed based on the main elements of the supply system: the lake intake, the two pumping stations, and the transmission pipeline. Additionally, an analysis was performed related to construction contingencies and other costs such as engineering, legal, and administration.

### **Lake Intake**

KWA representatives indicated in a meeting in November that the design documents for the intake were at 90% and that it was planned for advertisement in January 2013. A summary of the estimate is shown in Table 5-1.

Description	Estimate
Intake and Crib	\$22,076,850
ELAC at 25%	5,519,213
Property	2,300,000
<b>Total</b>	<b>\$29,896,063</b>

**Table 5-1: KWA Intake Cost Estimate**

Based on the evaluation, it appeared that the cost estimate was reasonable. Given that the design was nearly complete, the engineering, legal, administration, and construction contingencies (ELAC) at 25% were also found to be appropriate.

## Pumping Stations

KWA representatives indicated that the pump stations were estimated at a level of design less than 15%. Therefore, in addition to an evaluation of their cost estimate, other water pumping station costs were used for comparison. Additionally, contractors were also contacted for costs. Table 5-2 summarizes the KWA cost estimate compared to our cost estimate performed for the Treasury.

Description	KWA	Estimate	TYJT	Estimate
Pumping Stations		\$24,618,080		\$54,573,314
Land for Intermediate Pump Station and Reservoir		—		75,000
Subtotal		\$24,618,080		\$54,648,314
ELAC for Construction	25%	6,154,520	30%	16,394,494
Total		\$30,772,600		\$71,042,808

**Table 5-2: Pumping Stations Cost Estimate**

Two things to note regarding the difference in the cost estimates; firstly, there is a large difference in the cost estimates of the pumping stations. The estimate developed for the Treasury used several other pumping stations construction costs from Southeastern Michigan and discussions with contractors. These costs were then computed on a \$/MG's for comparison.

Secondly, our estimate for the Treasury is based on an ELAC of 30% instead of KWA's 25%. Although 25% was acceptable for the intake, it is believed to be too low for the pumping station estimate given that the engineering effort is less than 15%.

## Transmission Main

Although the specific route for the transmission main was not provided, an estimate was calculated based on the general information provided. Once again, the KWA estimate was based on a level of design less than 15%. The estimate performed for the Treasury used the line items provided by KWA for the pipeline and also consulted with contractors to evaluate the cost of construction. The comparison is shown in Table 5-3.

Although the cost of construction of the pipeline is similar, a value of 30% was used for ELAC due to the level of design. Additionally, KWA did not believe there would be any additional costs for easements; however, this did not seem practical. Therefore an estimate for acquiring the easements was added to the Treasury estimate and is based on the 277 easements identified by KWA. The cost shown includes surveying, legal, engineering, administration, etc.

Description	KWA	Estimate	TYJT	Estimate
Transmission Mains		\$166,202,316		\$167,419,530
ELAC for Construction	25%	41,550,579	30%	50,225,859
Subtotal		\$207,752,895		\$217,645,389
Easements		-		1,166,170
<b>Total</b>		<b>\$207,752,895</b>		<b>\$218,811,559</b>

**Table 5-3: Transmission Pipeline Cost Estimate**

### Other KWA Costs

In prior estimates of the construction cost, KWA used an ELAC of 37%. In this case it could be considered that the engineering effort associated with the design would have been included. However, it is believed that KWA's reduced ELAC of 25%, does not include the design effort. Additionally, it would be prudent to assume that the owner would want a construction manager during construction of this large project. A summary of these costs are shown in Table 5-4.

Description	Estimate
Design Engineering for Pumping Stations and the Transmission Pipeline	\$16,939,581
Construction Management at 5% of Project Cost Estimate of \$217,645,389	14,434,609
Administration	349,440
Legal, Easements, Contract Documents	831,000
<b>Total</b>	<b>\$32,554,630</b>

**Table 5-4: Other Costs**

### Summary Comparison

A summary of the two cost estimates are shown in Table 5-5. Based on the comparison, the estimate performed by TYJT shows a higher cost to Flint by approximately \$25,000,000.

Note that there are two other costs shown in the summary that were not previously addressed; power and backup power. Regarding the cost of providing power to the pumping facilities, the cost of \$4,000,000 appears reasonable.



The KWA has repeatedly indicated that backup power is not needed. Backup power is a standard practice in the water industry. Furthermore, a loss of power at either pumping facility will prevent the supply of water to both Flint and Genesee County. For these reasons, the cost of providing backup power was included in our estimate for the Treasury.

Description	KWA Estimate	TVIT Estimate
Intake/Crib	\$ 27,596,063	\$ 27,596,063
Pump Stations	30,772,600	71,042,808
Transmission Mains	207,752,895	217,645,389
Power	4,000,000	4,000,000
Redundant Power for PS		1,273,200
Land for Lake Huron Pumping Station	2,300,000	2,300,000
Design Engineering/PS and Transmission		16,939,581
Construction Management		14,434,410
Administration		349,440
Legal/Easement/Contract Documents		831,000
Easements		1,166,170
<b>Total</b>	<b>\$ 272,421,558</b>	<b>\$ 357,578,060</b>
<b>Flint Share at 30%</b>	<b>\$81,726,467</b>	<b>\$107,273,418</b>

**Table 5-5: Total Cost Comparison**

### ***Flint WTP Improvements***

The KWA analysis identified capital costs required to convert the existing WTP from river water treatment to treating lake water. The cost estimate was identified as \$7,100,000 in the 2009 report. This number was used in the our analysis, since additional information was not provided. For the purpose of the financial analysis; however, the \$7,100,000 was increased by 3% each year for three years to account for inflation.

### ***DWSD Imlay Station Supply Options***

The options identified by DWSD to supply service to Flint at the Imlay Pump Station would require Flint to purchase the 72-inch water main from Imlay to Master Meter, FL-1. The pipeline is approximately 25 miles long. The estimated cost provided by DWSD for estimating purposes is \$4,700,000.

### ***Financing***

The cost of financing the revenue bonds for the capital work was investigated. Based on conversations with local financial advisors knowledgeable in bond financing, an interest rate of 5% for the 25 year

period was considered acceptable. This is based on a Standard and Poor's bond rating of A without insurance.

Additional costs associated with the bond include the reserve and bond issuance fee. The bond holders will require a reserve of approximately 10% of the loan to be held for the 25 year payment period. The cost associated with the bond issuance has been estimated at 2.25% of the principal borrowed for the KWA project and 3% for the smaller loan associated with the Flint WTP improvements or the purchase of the 72-inch main.

Furthermore, since no revenue will be generated to pay on the bonds for the first three years that the system is being constructed, the cost associated with capitalizing the interest was also included.

Finally, interest on the reserve will be provided back to KWA and Flint. Although the interest is currently less than 1%, it was determined that a 3% rate would be more prudent long-term.

## 6. FINDINGS

Using the information described in the previous sections, a cost evaluation was conducted for the KWA supply and the DWSD options. Individual worksheets for each option are provided in Appendix B. For the purpose of comparison a 30 year period was used. This period includes the 3 year construction period, the 25 loan period and an additional two years to get a sense of the cost of operation after the loans have been paid.

There were three separate cost sheets prepared for the KWA option. The first cost sheet (KWA) is based on the cost estimate provided by KWA. The costs provided assumed no overruns or delay in construction. With KWA's own assumptions of an overrun in construction of 15% and a one year delay in operations, the KWA estimated cost becomes \$686,375,920 through Year 2042.

Since this cost estimate did not appear to include the financing of revenue bonds, another cost sheet (KWA-1) was developed that included KWA's cost estimate without overruns with the additional finance costs associated with the revenue bonds. A final cost sheet (KWA-2) includes the cost associated with the revenue bonds based on the estimate provided by TYJT for the Treasury.

A summary of the cost sheets provided in Appendix B are shown in Table 6-1. Figure 6-1 shows the cumulative annual costs associated with each option.

Option	Costs through 2042 (\$)	Ranking by Cost
DWSD 8 MGD Maximum Day at Imlay Station	634,795,488	1
KWA (10/31/12 No Overruns, As Provided)*	649,775,166	2
DWSD 8 MGD Maximum Day at FL-1	672,671,705	3
KWA-1 (10/31/12 No Overruns with Cost of Financing)	707,279,715	4
DWSD 12 MGD Maximum Day at Imlay Station	725,576,803	5
DWSD 12 MGD Maximum Day at FL-1	762,110,308	6
KWA-2 (Treasury Estimate)	766,784,313	7
DWSD 18 MGD Maximum Day at FL-1	821,226,268	8

\* \$686,375,920 with 15% overrun in construction and a one year delay in operations

**Table 6-1: Total Cost of Options through 2042**

Based on the analysis, it is prudent to assume the KWA water supply option costs would be somewhere between the KWA-1 and KWA-2 options. Therefore, the analysis indicates that the two DWSD options of supplying 8 MGD on a maximum day and up to 8 MGD on average are the least cost options for Flint. These options allow Flint to maximize the use of existing assets; the City of Flint's (the Flint WTP) and DWSD's (the existing 72-inch main).

Additionally, in recent conversations with the Treasury another option was discussed that could potentially be the most cost-effective solution. Currently the Flint WTP serves as a backup if service is

lost through either the DWSD or KWA pipeline. If the a twin pipe paralleling the DWSD 72-inch water main were constructed with interconnects with the 72-inch line, then the new water main could serve as the backup to Flint and the Flint WTP could be abandoned or potentially sold to Genesee County for their use.

The construction of the parallel pipeline would be considered in the DWSD capital expenditure as a Common to All (CTA) cost. This means that the capital cost of the pipeline would be shared by all DWSD customers and not just by Flint. Preliminary analysis of this option appears to be the most cost-effective of all the options discussed. However, a more thorough cost analysis is warranted and this approach would require an agreement between Flint and DWSD.

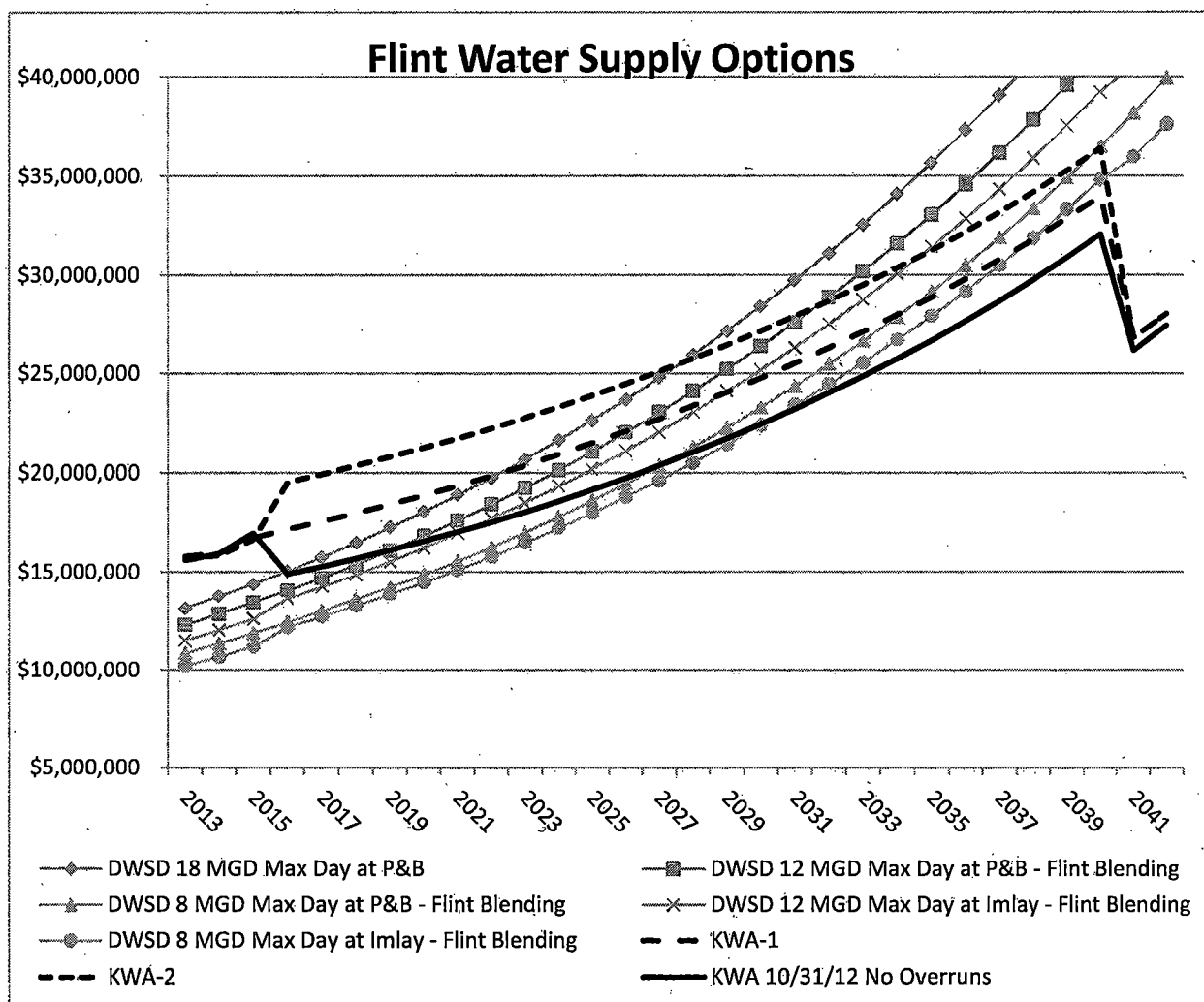


Figure 6-1: Flint Water Supply Options through 2042

## ***7. OTHER CONSIDERATIONS***

As part of the investigation other issues were identified that may result in risks to Flint that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

### ***Redundancy/Reliability***

In one of the first meetings related to this task assessment, which was held on November 1, 2012, the Genesee County Drain Commissioner, Mr. Jeff Wright, stated that one of the main reasons for pursuing the KWA supply option related to the lack of reliability of the DWSD system. He pointed to the Northeast blackout of 2003; a widespread power outage that occurred throughout parts of the Northeastern and Midwestern United States and Ontario, Canada, on Thursday, August 14, 2003. He stated that Flint and Genesee County were out of water for several days.

It is worth noting that this was a power outage of historic proportions that affected millions of Americans. However, DWSD did begin supplying water again relatively quickly in comparison to other major cities impacted by the same power outage.

Furthermore, the KWA supply system offers less redundancy to Flint than the current DWSD system. Under both options, Flint is supplied by a single pipeline; however, DWSD has backup power at all of its major facilities supplying Flint. The KWA system will not have a redundant power at its pumping facilities. This would be a major risk.

Currently, backup to the DWSD system for Flint is Flint's WTP using the Flint River as the source of supply. KWA has stated that the Flint River source would also be used as backup to Flint if the KWA supply through its pipeline was lost. However, since the Flint WTP would be upgraded to treat Lake Huron water under the KWA option, using the Flint River as a backup source would require the Flint WTP to maintain two process treatment streams.

In addition to Flint and Genesee County, the DWSD's 72-inch main supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 MG. Only supplying these three remaining communities would cause the water age to increase dramatically; somewhere in excess of three weeks old, before reaching the customers' master meters. Since the half-life of chlorine in the DWSD system is approximately 5 days, the chlorine would most probably be near zero requiring re-chlorination of the finished water upstream of the master meters.

Re-chlorinating is a costly and risky process due to the instability of chlorine gas. It is unknown whether DWSD would pursue this improvement or possibly abandoned the 72-inch pipeline.

If Flint is supplied by the KWA system, then DWSD supplying their other customers along the 72-inch water main may be reconsidered. Since the KWA system is a raw water supply, the communities would

either have to build a treatment facility to treat the water from KWA or find another water source for their communities.

### ***Additional Cost and Risk Considerations***

The design of the KWA supply and the construction of the system have not been completed; therefore, final costs and time to complete are unknown. Cost overruns and delays in completion will both negatively impact Flint's final cost. As example, if the project is not completed within the three year period, payment on the bonds will be due, but the revenue source needed from the sale of water could not be provided.

Furthermore, there is always a risk with large water system construction; especially those including an intake in the Great Lakes, pumping stations and rehabilitation of older water treatment plants. These risks include the potential of explosive gases in tunneling below Lake Huron, changing site conditions associated with the large number of miles of pipe installation and rehabilitating an older WTP, and the startup and debugging of the entire pumping system.

Flint has indicated that they have a high water loss. Not addressing this issue prior to sizing the Flint supply pipeline from KWA could cause the water main to be oversized along with its incremental cost in construction.

Also, the KWA supply option appears to run counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating to from another water system is in contradiction to the program.

Finally, there is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.

### ***Flint's Autonomy***

Flint has indicated that a major point of consideration is that they have no control over the rate increases issued to Flint by DWSD. All other counties supplied by DWSD have representatives on the Board of Water Commissioners (BOWC). The BOWC is one of the governing bodies that approve the water rates. Since Flint and Genesee County do not have a representative on the BOWC, Flint believes they are held "hostage" to DWSD's rates and cost of service.

This issue was stated in Flint's handout at the November 1, 2012 meeting. The handout is titled, "Flint Water Supply Future." However, it is worth noting in the same handout, Flint also identifies similar concerns with the governing board of the KWA system. Notably, that although Flint and Genesee County will be the only customers and Flint will be responsible for 30 percent of the construction cost,

they will have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs.

STATE OF MICHIGAN CONTRACT NO. 271N3200089

CITY OF FLINT WATER SUPPLY ASSESSMENT

State of Michigan, Department of Treasury

**Appendix A: Meeting Minutes**



## MEETING MINUTES

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**IN ATTENDANCE:** Sue McCormick, DWSD Director  
Darryl Latimer, DWSD Deputy Director  
George Karmo, TYJT  
Awni Qaqish, TYJT  
Dave Guastella, TYJT

**DATE:** November 24, 2012

**PURPOSE OF MEETING:** Meeting with DWSD for the Indefinite-scope, Indefinite-delivery Contract Number 00383, 2012 Professional General Architectural/Engineering Services – City of Flint Water Supply Assessment

**PREPARED BY:** Dave Guastella

A meeting was held at the DWSD Main Office Building on November 19, 2012 to discuss the water supply options being presented by DWSD to the City of Flint. The main items discussed generally followed the attached DWSD Discussion/Questions that were provided to the Department prior to the meeting. A summary of the key points discussed are provided below.

### DISCUSSION ITEMS

1. Question/Discussion Item: Verify that the four options presented at the November 1, 2012 meeting are still available for consideration:
  - a. Supplied from Potter & Baxter using the new model contract (assume a Maximum Day Customer),
  - b. Supplied from Imlay Station,
  - c. Finished un-pumped supply from Lake Huron WTP, and
  - d. Raw un-pumped supply from Lake Huron WTP.

*DWSD prefers to focus on the first two supply point listed; from the current location at Potter & Baxter and at the Imlay Pump Station as these apply specifically to Flint.*

*DWSD provided the attached summary regarding the current costs to Flint based on the various options that DWSD is offering. The savings associated with each option is provided as well. As example, if Flint were to purchase water from the supply point located at Imlay Station, the current cost to Flint would be \$5,661,000 and it would be a savings of nearly 50%*

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compared to Flint's current rate.

2. Question/Discussion Item: What additional capital improvements will be required for each option?

*If Imlay Pump Station is selected as the supply point then Flint would need to purchase the 72-inch water main and an agreement to supply Lapeer would need to be worked out. DWSD believes that this could be worked out through a "wheeling" charge over the 72-inch main or possibly moving the supply point downstream of the Lapeer connection.. DWSD estimates the value of the water main at \$4.7M. Flint could bond for this amount or DWSD could include the cost into Flint's rate.*

3. Question/Discussion Item: Are there other options being presented that should be considered (e.g., blending)?

*Only the two options indicated above are currently being considered and both would include blending; DWSD providing 2/3 of the supply and the Flint WTP providing the other 1/3.*

4. Question/Discussion Item: To evaluate each option over the 25 year planning period, provide:

- a. Annual water rate for Flint for 2002 through 2012, and the
- b. Projected annual rate adjustment for each option. What are the proposed measures to keep the rate adjustments down in the future?

*DWSD provided the attached historical rates from 2002 through 2012 for the existing water contract with Flint. The attachment also includes what the rates would have been if Flint had signed the new model contract or had taken service from Imlay. These rates were provided back to 2010.*

*DWSD believes that 5% would be a good estimation to assume for their annual escalation in rates over the 25 year planning period.*

5. Question/Discussion Item: Flint stated a 10% increase in the capacity charge. What number did DWSD provide Flint?

*It was unclear to DWSD where the 10% increase in capacity charge stated by Flint came from. DWSD's information provided shows an average of 6.3%. DWSD offered a meeting with TYJT to discuss how the fixed and commodity charges are allocated.*

6. Question/Discussion Item: Flint financial comparison is based on the initial Cost of \$14,413,858, which includes \$2,725,538 for Flint WTP operating cost; i.e, DWSD charge is \$11,688,320. How good is this number?

*DWSD indicated that the charge of \$11,638,320 is good through 6/30/13. based on their existing contract with DWSD.*

7. Question/Discussion Item: KWA's initial charge to Flint is based on 12 MGD. Is DWSD charge

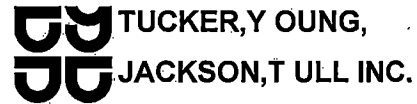
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based on 12 MGD?

*Yes, 12 MGD from DWSD would be a maximum with Flint supplying 6 MGD for a total of 18 MGD (2/3 vs. 1/3).*

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**Indefinite-scope, Indefinite-delivery Contract Number 00383  
2012 Professional General Architectural/Engineering Services**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

DWSD Discussion/Questions for the November 19, 2012 Meeting

1. Verify that the four options presented at the November 1, 2012 meeting are still available for consideration:
  - c. Supplied from Potter & Baxter using the new model contract (assume a Maximum Day Customer),
  - d. Supplied from Inlay Station,
  - e. Finished un-pumped supply from Lake Huron WTP, and
  - f. Raw un-pumped supply from Lake Huron WTP.
2. What additional capital improvements will be required for each option?
3. Are there other options being presented that should be considered (e.g., blending)?
4. To evaluate each option over the 25 year planning period, provide:
  - g. Annual water rate for Flint for 2002 through 2012, and the
  - h. Projected annual rate adjustment for each option. What are the proposed measures to keep the rate adjustments down in the future?
5. Flint stated a 10% increase in the capacity charge. What number did DWSD provide Flint?
6. Flint financial comparison is based on the initial Cost of \$14,413,858, which includes \$2,725,538 for Flint WTP operating cost, i.e DWSD charge is \$11,688,320. How good is this number?
7. KWA's initial charge to Flint is based on 12 MGD. Is DWSD charge based on 12 MGD?

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**Summary of DWSD Cost Allocations to Flint Under Various Scenarios**  
**Flint Only**

	Revenue	Rates and Charges		
	<u>Requirement</u>	<u>Fixed</u>	<u>Commodity</u>	<u>Avg Unit Cost</u>
1 Status Quo	11,461,700	357,271	12.46	19.91
2 Model Contract	9,732,100	275,517	11.16	16.90
3 Change	(1,729,600)	(81,754)	(1.30)	(3.00)
4 % Change	-15.1%	-22.9%	-10.4%	-15.1%
5 Max Day Only	9,424,700	271,010	10.72	16.37
6 Change	(307,400)	(4,507)	(0.44)	(0.53)
7 % Change	-3.3%	-1.7%	-4.1%	-3.3%
8 Allow Blending	6,302,800	182,369	10.72	16.42
9 Change	(3,121,900)	(88,641)	0.00	0.05
10 % Change	-49.5%	-48.6%	0.0%	0.3%
11 Imlay City Connections	5,800,700	170,912	9.77	15.11
12 Change	(502,100)	(11,457)	(0.95)	(1.31)
13 % Change	-8.7%	-6.7%	-9.7%	-8.7%
14 Cumulative Change	(5,661,000)	(186,359)	(2.69)	(4.80)
15 Cumulative %Change	-49.4%	-52.2%	-21.6%	-24.1%

	Assumptions					
	Avg Day	Max Day	Peak Hour	Distance	Elevation	Sales
	<i>mgd</i>	<i>mgd</i>	<i>mgd</i>	<i>miles</i>	<i>feet</i>	<i>mgd</i>
1 Status Quo	11.8	21.6	22.6	52.0	866	11.8
2 Model Contract	11.8	17.9	18.8	52.0	866	11.8
3 Max Day Only	11.8	17.9	17.9	52.0	866	11.8
4 Allow Blending	7.9	11.9	11.9	52.0	866	7.9
5 Imlay City Connections	7.9	11.9	11.9	45.2	866	7.9

## Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<u>As Charged</u>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<u>Hypothetical Model Contract</u>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		13.96	13.96			6.8%	
2011	145,918	13.74	15.28		-1.6%	9.5%	
2012	378,968	12.58	16.57	159.7%	-8.4%	8.4%	
2013	597,323	11.63	17.93	57.6%	-7.6%	8.2%	5.5%

## Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<i>Hypothetical Model Contract - Flint Only</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		11.73	11.73			-10.3%	
2011	70,060	12.45	13.89		6.1%	18.4%	
2012	175,882	11.47	15.08	151.0%	-7.9%	8.6%	
2013	272,923	10.65	16.24	55.2%	-7.1%	7.7%	4.4%

# Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	<b>6.3%</b>

## *Hypothetical Model Contract - Flint Only @ Imlay*

2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		11.16	11.16			-14.6%	
2011	65,919	10.88	12.23		-2.5%	9.6%	
2012	165,275	9.89	13.28	150.7%	-9.1%	8.6%	
2013	255,580	9.09	14.32	54.6%	-8.1%	7.8%	<b>2.9%</b>

TFG



## MEETING MINUTES

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**IN ATTENDANCE:** Ed Kurtz; Flint Emergency Financial Manager, City of Flint  
Dayne Walling; Mayor, City of Flint  
Mike Brown, City of Flint  
John O'Brien, Genesee County  
Howard Croft, City of Flint  
Dwayne "Duffy" Johnson, City of Flint  
Brent Wright, City of Flint  
Awni Qaqish, TYJT  
Dave Guastella, TYJT

**DATE:** November 24, 2012

**PURPOSE OF MEETING:** Meeting with the City of Flint for the Indefinite-scope, Indefinite-delivery Contract Number 00383, 2012 Professional General Architectural/Engineering Services – City of Flint Water Supply Assessment

**PREPARED BY:** Dave Guastella

A meeting was held at the City of Flint Municipal Center on November 20, 2012 to discuss the water supply option being presented by the Karegnondi Water Authority (KWA) to the City of Flint. The main items discussed generally followed the attached KWA Discussion/Questions that were provided to City prior to the meeting. A summary of the key points discussed are provided below.

The questions submitted are repeated in the Discussion Items for easy reference. A summary of the action items generated from the meeting follow the Discussion Items.

### DISCUSSION ITEMS

1. Question/Discussion Item: Is the maximum day demand of 18 MGD for Flint the maximum day demand (MDD) throughout the 25 year planning period? If not, what is the 25 year projected MDD?

*KWA would supply up to 18 MGD. 18 MGD has been assumed as the maximum day demand and 12 MGD is assumed as the average day demand throughout the 25 year planning period.*

2. Question/Discussion Item: Copy of the intake contract documents and engineer's estimate.

The intake contract documents are approximately 90% complete and are not available for distribution. However, the updated Appendix 20, dated October 4, 2012 includes the most recent cost estimate of the intake based on the current design in process.

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3. Question/Discussion Item: Documentation of the Flint WTP improvements required and cost estimate.

*The costs are approximately \$7M as presented in the September 2009 Preliminary Engineering Report. However, this estimate has been updated. Some processes have been eliminated. John O'Brien will provide the updated costs and the description of the planned improvements to the plant.*

4. Question/Discussion Item: Confirm Flint's allocated percentage of the KWA capital improvements (30%?).

*Yes, the allocation is based on 18 MGD/60 MGD total capacity.*

5. Question/Discussion Item: Copy of the proposed KWA operating agreement for Flint.

*John O'Brien will provide the operating agreement as well as the Capacity Contract and Articles of Incorporation.*

6. Question/Discussion Item: What is the annual operating agreement adjustment projected for the 25 year planning period?

*This information is provided in Appendix 14, Table 14.2 of the September 2009 Preliminary Engineering Report. Operating cost based on Table 1. Used 12 MGD as average day demand (ADD). Assumed 5% as the annual increase in operating costs. John O'Brien indicated that these operating costs were based on Genesee County's operating costs. John O'Brien will provide the last 10 years of audited financial statements for the water fund.*

*To assess operating and maintenance costs for the Flint WTP, Duffy will provide multiple years of financial statements for the water fund. Duffy did not believe they had 10 years, but they will provide what they have.*

*Regarding operation and maintenance costs, Flint believes that these costs will increase by 2/3 of what they are now.*

7. Question/Discussion Item: Need the route of the pipelines and the locations of the facilities proposed. Purpose is to identify constraints that impact costs (i.e., utilities, environmental (e.g. wetlands), easements, etc.).

*KWA will not release the route due to concerns regarding speculation of land and easements. John O'Brien did indicate that the Lake Huron pump station would be at Fisher and M-25. The intermediate pump station site is near a location of the Lapeer/Sanilac/St. Clair border; where all three meet.*

8. Question/Discussion Item: KWA's initial charge to Flint is based on a 12 MGD average day demand. What is the basis of this number? Are there population projections and water use figures available that were used to determine the Flint demand for the 25 year planning period?

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*This was answered in Question No. 1 above.*

9. Question/Discussion Item: Is there a transition plan and cost during construction of the KWA system identified?

*Flint is looking for an agreement with DWSD for back-up supply from the 72-inch main at the Genesee border.*

10. Question/Discussion Item: The October 4, 2012 Preliminary Engineering Report Update states: "no backup power is planned for the pumps" (LHPS) and "No backup power is planned for pumping" (IPS). In case of power loss, how would Flint supply its customers?

*Flint indicated that they have adequate storage to supply the system for 6 to 7 days. Flint has 55 MG of storage and Genesee County has 65 MG for 2.5 days.*

11. Question/Discussion Item: The latest plan shows only a 5 million gallon ground reservoir is planned for balancing between LHPS and IPS. How is redundancy maintained?

*In cases of emergency, Flint indicated that the back-up for the KWA system will be the same as it is now with DWSD; they will use the Flint River as the source water. Flint currently operates their plant four times a year.*

*When questioned as to whether the WTP will be able to treat both lake water from the KWA system and river water Flint indicated that once the improvements identified in the September 2009 Preliminary Engineering Report are completed they will be able to accomplish both treatment processes. Flint will provide a schematic of the treatment trains at the WTP and a copy of the Flint transmission system.*

*Genesee County indicated that additional redundancy would also be provided from the new Genesee County WTP.*

*Regarding hydraulic transients; Genesee County indicated that a model analysis has not been included, but capital costs for mitigating transients have been included.*

12. Question/Discussion Item: Related to the construction cost:

- a. Does it include an additional traffic lane since the construction will occupy half the right of way? *Not required, all roads are county roads; however, there are a few State road crossings.*
- b. Does it include costs/fees for permit requirements such as inspection cost by the jurisdictional authorities? As a point of reference, the permit fee costs for the Flint Transmission System came out to be \$5.8 million. *Not required; all of the counties have waived any fees.*
- c. Does the cost of the steel pipe segments include corrosion protection measures such as

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anode stations and related O&M? Yes; however, the KWA has not settled on using steel pipe. PCCP pipe may be used. Steel shown in estimate because it is highest in cost and therefore the pricing is conservative.

d. SCADA monitoring stations require power. Is the cost of bring power to the SCADA stations included? Again, as a point of reference for the Flint Transmission System we estimated \$800,000 for power to SCADA and valve operators. Yes, Genesee County did emphasize that the SCADA system will be simple and straightforward because a lot of controls are not required.

e. Other items discussed at the meeting included:

- The 2009 plant improvement cost is still good; however, there will be some reduction, such as a sulfuric chloride feed system that was eliminated. Plant capacity now is 36MGD, but will be 18 MGD.
- The KWA Lake Huron Pumping Station (LHPS) is now only high lift pump station.
- Genesee County will provide the distance of the intake pipe from the crib to the LHPS.
- The intake project is almost ready to bid; waiting for the COE permit.
- Genesee County is estimating the construction for the pipe lines and pump stations will begin July 2013.
- The route has been flown for survey.
- Genesee County is estimating construction will be complete and the project will be placed in service by Jan 2016.
- Genesee County to provide a list of assumptions that the \$272 million cost estimate is based on since the route is now known.

13. The Flint River is identified as a backup: At what capacity? MDD or emergency supply?

*The Flint River would serve as a back up supply.*

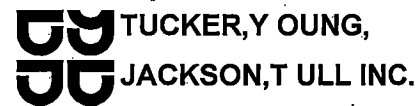
14. Where did the 40 years come from (Flint hostage to Detroit)? DWSD's new contracts are 30 years with openers to revise terms of supply (volume and pressure) after the first two years, then three years, and then in five year increments thereafter.

*The 40 years was stated in error. The reference was to DWSD's requirement to sign a 30 year contract.*

*After 40 years Flint will own 30% of the project and can sell their share of ownership if they want. Conversely, with DWSD, they continue to pay for the capital projects but have no ownership. Flint believes they will know what they will be charged for the next 25 years versus DWSD that can't commit to a fixed escalation.*

Action Items for Follow-up		
Items:	Assigned To:	Date to Complete
1. Updated Costs for the Flint WTP Improvements and a description of the improvements.	John O'Brien	11/21/12
2. KWA Operating Agreement, Capacity Contract and Articles of Incorporation.	John O'Brien	11/20/12
3. Provide the last 10 years of audited financial statements for the Genesee water fund.	John O'Brien	11/20/12
4. Provide multiple years of financial statements for the City of Flint water fund.	Duffy Johnson	11/26/12
5. Provide schematic of the Flint WTP and a map of the Flint transmission system.	Brent Wright	11/26/12
6. Provide the length of the intake pipe from the crib to the pump station.	John O'Brien	11/20/12
7. Provide a list of assumptions that the \$272 million cost estimate is based on since the route is now known.	John O'Brien	11/26/12

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**Indefinite-scope, Indefinite-delivery Contract Number 00383  
2012 Professional General Architectural/Engineering Services**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

**KWA Discussion/Questions for the November 20, 2012 Meeting**

1. Is the maximum day demand of 18 MGD for Flint the maximum day demand (MDD) throughout the 25 year planning period? If not, what is the 25 year projected MDD?
2. Copy of the intake contract documents and engineer's estimate.
3. Documentation of the Flint WTP improvements required and cost estimate.
4. Confirm Flint's allocated percentage of the KWA capital improvements (30%?).
5. Copy of the proposed KWA operating agreement for Flint.
6. What is the annual operating agreement adjustment projected for the 25 year planning period?
7. Need the route of the pipelines and the locations of the facilities proposed. Purpose is to identify constraints that impact costs (i.e., utilities, environmental (e.g. wetlands), easements, etc.).
8. KWA's initial charge to Flint is based on a 12 MGD maximum day demand. What is the basis of this number? Are there population projections and water use figures available that were used to determine the Flint demand for the 25 year planning period?
9. Is there a transition plan and cost during construction of the KWA system identified?
10. The October 4, 2012 Preliminary Engineering Report Update states: "no backup power is planned for the pumps" (LHPS) and "No backup power is planned for pumping" (IPS). In case of power loss, how would Flint supply its customers?
11. The latest plan shows only a 5 million gallon ground reservoir is planned for balancing between LHPS and IPS. How is redundancy maintained?
12. Related to the construction cost:
  - a. Does it include an additional traffic lane since the construction will occupy half the right of way?
  - b. Does it include costs/fees for permit requirements such as inspection cost by the jurisdictional authorities? As a point of reference, the permit fee costs for the Flint Transmission System came out to be \$5.8 million.

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- 
- c. Does the cost of the steel pipe segments include corrosion protection measures such as anode stations and related O&M?
  - d. SCADA monitoring stations require power. Is the cost of bring power to the SCADA stations included? Again, as a point of reference the for the Flint Transmission System we estimated \$800,000 for power to SCADA and valve operators.
13. The Flint River is identified as a backup: At what capacity? MDD or emergency supply?
14. Where did the 40 years come from (Flint hostage to Detroit)? DWSD's new contracts are 30 years with openers to revise terms of supply (volume and pressure) after the first two years, then three years, and then in five year increments thereafter.

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STATE OF MICHIGAN CONTRACT NO. 271N3200089

CITY OF FLINT WATER SUPPLY ASSESSMENT

State of Michigan, Department of Treasury

**Appendix B: Cost Worksheets**

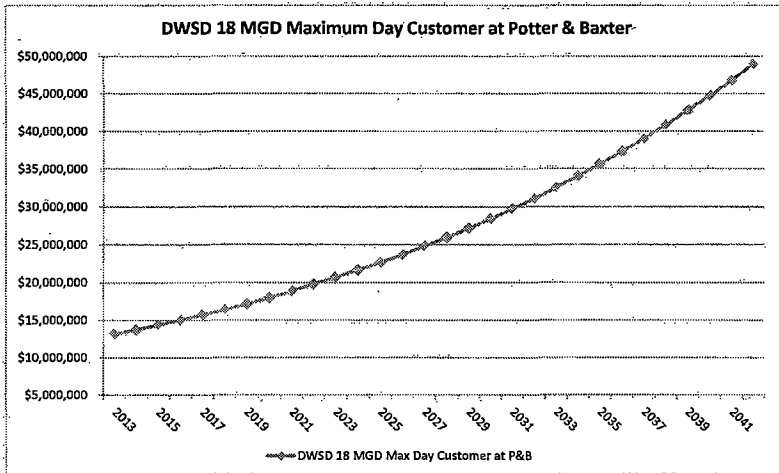


**DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contract at Potter & Baxter**

				Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
<u>Capacity</u>	Flint ADD:	0.60 MGD	81 MCF/Day	1	2013	\$ 3,538,214	9,585,642	-	\$ 13,123,856
	DWSD ADD:	12 MGD	1,604 MCF/Day	2	2014	\$ 3,697,788	10,036,167	-	\$ 13,733,955
				3	2015	\$ 3,864,558	10,507,867	-	\$ 14,372,425
<u>Annual Volume</u>	Flint:	29,412 MCF		4	2016	\$ 4,038,850	11,001,736	-	\$ 15,040,586
	DWSD:	585,561 MCF		5	2017	\$ 4,221,002	11,518,818	-	\$ 15,739,820
				6	2018	\$ 4,411,369	12,060,203	-	\$ 16,471,571
				7	2019	\$ 4,610,322	12,627,032	-	\$ 17,237,354
				8	2020	\$ 4,818,247	13,220,503	-	\$ 18,038,750
<u>2013 Cost of Supply</u>	Flint WTP O&M:	120.30 /MCF	\$ 3,538,214 /Yr	9	2021	\$ 5,035,550	13,841,866	-	\$ 18,877,416
	DWSD:	16.37 /MCF	\$ 9,585,642 /Yr	10	2022	\$ 5,262,653	14,492,434	-	\$ 19,755,087
				11	2023	\$ 5,499,999	15,173,578	-	\$ 20,673,577
<u>Escalation/inflation Rate</u>	Flint:	4.51% /Yr		12	2024	\$ 5,748,049	15,886,736	-	\$ 21,634,785
	DWSD:	4.7% /Yr		13	2025	\$ 6,007,286	16,633,413	-	\$ 22,640,699
				14	2026	\$ 6,278,215	17,415,183	-	\$ 23,693,398
				15	2027	\$ 6,561,362	18,233,697	-	\$ 24,795,059
				16	2028	\$ 6,857,279	19,090,681	-	\$ 25,947,960
<u>Capital Expenditure</u>	Amount:	\$ -		17	2029	\$ 7,166,543	19,987,943	-	\$ 27,154,486
	Reserve:	\$ -	0% Reserve Rate: 0.00%	18	2030	\$ 7,489,754	20,927,376	-	\$ 28,417,130
	Amount plus Reserve:	\$ -		19	2031	\$ 7,827,542	21,910,963	-	\$ 29,738,505
	Revenue Bond Rate:	5%		20	2032	\$ 8,180,564	22,940,778	-	\$ 31,121,342
	Number of Years:	25		21	2033	\$ 8,549,507	24,018,995	-	\$ 32,568,502
	Annual Cost:	\$0		22	2034	\$ 8,935,090	25,147,887	-	\$ 34,082,977
				23	2035	\$ 9,338,063	26,329,838	-	\$ 35,667,901
				24	2036	\$ 9,759,209	27,567,341	-	\$ 37,326,550
				25	2037	\$ 10,199,350	28,863,006	-	\$ 39,062,355
					2038	\$ 10,659,340	30,219,567	-	\$ 40,878,907
					2039	\$ 11,140,076	31,639,886	-	\$ 42,779,963
					2040	\$ 11,642,494	33,126,961	-	\$ 44,769,455
					2041	\$ 12,167,570	34,683,928	-	\$ 46,851,499
					2042	\$ 12,716,328	36,314,073	-	\$ 49,030,401
						\$ 216,222,171			

**25 Yrs Cumulative**  
\$ 596,916,044

**30 Yrs Cumulative**  
\$ 821,226,268



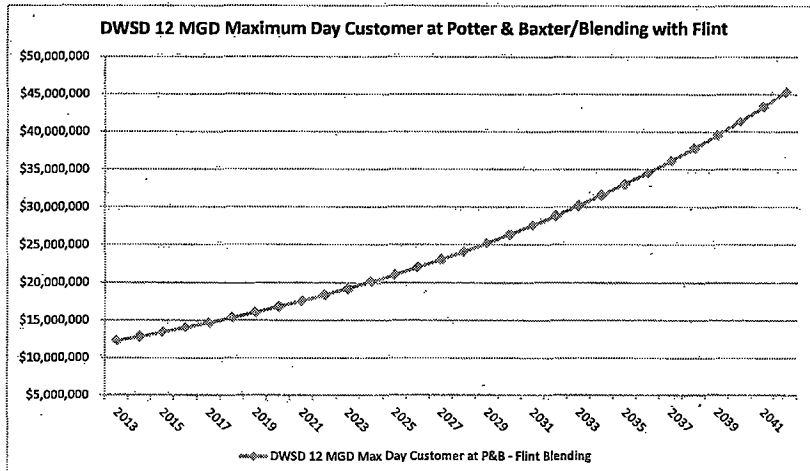
**DWSD Worksheet : 12 MGD Maximum Day Customer with Model Contract at Potter & Baxter/Blending with Flint**

				Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
<u>Capacity</u>									
Flint ADD:	4 MGD	535 MCF/Day		1	2013	\$ 5,895,097	6,367,005	-	\$ 12,262,103
DWSD ADD:	8 MGD	1,070 MCF/Day		2	2014	\$ 6,160,966	6,666,255	-	\$ 12,827,221
				3	2015	\$ 6,438,826	6,979,569	-	\$ 13,418,395
<u>Annual Volume</u>				4	2016	\$ 6,729,217	7,307,608	-	\$ 14,036,825
Flint:	195,187 MCF	195187.1658		5	2017	\$ 7,032,705	7,651,066	-	\$ 14,683,771
DWSD:	390,374 MCF			6	2018	\$ 7,349,880	8,010,666	-	\$ 15,360,546
				7	2019	\$ 7,681,359	8,387,167	-	\$ 16,068,527
				8	2020	\$ 8,027,789	8,781,364	-	\$ 16,809,153
<u>2013 Cost of Supply</u>				9	2021	\$ 8,389,842	9,194,088	-	\$ 17,583,930
Flint WTP O&M:	\$ 30.20 /MCF	\$ 5,895,097 /Yr		10	2022	\$ 8,768,224	9,626,210	-	\$ 18,394,434
DWSD:	\$ 16.31 /MCF	\$ 6,367,005 /Yr		11	2023	\$ 9,163,671	10,078,642	-	\$ 19,242,313
				12	2024	\$ 9,576,952	10,552,338	-	\$ 20,129,291
<u>Escalation/Inflation Rate</u>				13	2025	\$ 10,008,873	11,048,298	-	\$ 21,057,171
Flint:	4.51% /Yr			14	2026	\$ 10,460,273	11,567,568	-	\$ 22,027,841
DWSD:	4.7% /Yr			15	2027	\$ 10,932,031	12,111,244	-	\$ 23,043,275
				16	2028	\$ 11,425,066	12,680,473	-	\$ 24,105,538
				17	2029	\$ 11,940,336	13,276,455	-	\$ 25,216,791
<u>Capital Expenditure</u>				18	2030	\$ 12,478,845	13,900,448	-	\$ 26,379,294
Amount:	\$ -			19	2031	\$ 13,041,641	14,553,769	-	\$ 27,595,410
Reserve:	\$ -	0% Reserve Rate: 0.00%		20	2032	\$ 13,629,819	15,237,796	-	\$ 28,867,616
Amount plus Reserve:	\$ -			21	2033	\$ 14,244,524	15,953,973	-	\$ 30,198,497
Revenue Bond Rate:	5%			22	2034	\$ 14,886,952	16,703,810	-	\$ 31,590,762
Number of Years:	25			23	2035	\$ 15,558,354	17,488,889	-	\$ 33,047,242
Annual Cost:	\$0			24	2036	\$ 16,260,035	18,310,866	-	\$ 34,570,902
				25	2037	\$ 16,993,363	19,171,477	-	\$ 36,164,840
				2038	\$ 17,759,764	20,072,537	-	\$ 37,832,300	
				2039	\$ 18,560,729	21,015,946	-	\$ 39,576,675	
				2040	\$ 19,397,818	22,003,695	-	\$ 41,401,513	
				2041	\$ 20,272,660	23,037,869	-	\$ 43,310,528	
				2042	\$ 21,186,956	24,120,649	-	\$ 45,307,605	

DWSD 12 MGD Maximum Day Customer at Potter & Baxter/Blending with Flint

**25 Yrs Cumulative**  
\$ 554,681,686

**30 Yrs Cumulative**  
\$ 762,110,308

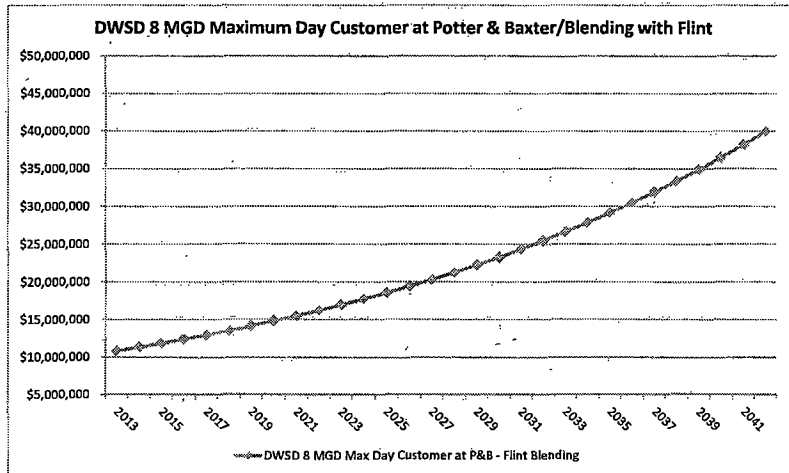


**DWSD Worksheet : 8 MGD Maximum Day Customer with Model Contract at Potter & Baxter/Blending with Flint**

				Flint WTP		Water	Revenue	Interest on	TOTAL
Capacity	Flint ADD:	4 MGD	535 MCF/Day	Year	O&M	Purchase	Bond Payment	Reserve	
	DWSD ADD:	8 MGD	1,070 MCF/Day	1	2013	\$ 5,895,097	4,949,947	-	\$ 10,845,044
Annual Volume	Flint:	195,187 MCF		2	2014	\$ 6,160,966	5,182,594	-	\$ 11,343,560
	DWSD:	390,374 MCF		3	2015	\$ 6,438,826	5,426,176	-	\$ 11,865,002
				4	2016	\$ 6,729,217	5,681,206	-	\$ 12,410,423
				5	2017	\$ 7,032,705	5,948,223	-	\$ 12,980,928
				6	2018	\$ 7,349,880	6,227,789	-	\$ 13,577,669
2013 Cost of Supply	Flint WTP O&M:	\$ 30.20 /MCF	\$ 5,895,097 /Yr	7	2019	\$ 7,681,359	6,520,495	-	\$ 14,201,855
	DWSD:	\$ 12.68 /MCF	\$ 4,949,947 /Yr	8	2020	\$ 8,027,789	6,826,959	-	\$ 14,854,747
				9	2021	\$ 8,389,842	7,147,826	-	\$ 15,537,668
				10	2022	\$ 8,768,224	7,483,774	-	\$ 16,251,997
				11	2023	\$ 9,163,671	7,835,511	-	\$ 16,999,182
Escalation/Inflation Rate	Flint:	4.51% /Yr		12	2024	\$ 9,576,952	8,203,780	-	\$ 17,780,732
	DWSD:	4.7% /Yr		13	2025	\$ 10,008,873	8,589,358	-	\$ 18,598,230
				14	2026	\$ 10,460,273	8,993,057	-	\$ 19,453,330
				15	2027	\$ 10,932,031	9,415,731	-	\$ 20,347,762
				16	2028	\$ 11,425,066	9,858,271	-	\$ 21,283,336
Capital Expenditure	Amount:	\$ -		17	2029	\$ 11,940,336	10,321,609	-	\$ 22,261,945
	Reserve:	\$ -	0% Reserve Rate: 0.00%	18	2030	\$ 12,478,845	10,806,725	-	\$ 23,285,570
	Amount plus Reserve:	\$ -		19	2031	\$ 13,041,641	11,314,641	-	\$ 24,356,282
	Revenue Bond Rate:	5%		20	2032	\$ 13,629,819	11,846,429	-	\$ 25,476,248
	Number of Years:	25		21	2033	\$ 14,244,524	12,403,211	-	\$ 26,647,735
	Annual Cost:	\$0		22	2034	\$ 14,886,952	12,986,162	-	\$ 27,873,114
				23	2035	\$ 15,558,354	13,596,512	-	\$ 29,154,866
				24	2036	\$ 16,260,035	14,235,548	-	\$ 30,495,583
				25	2037	\$ 16,993,363	14,904,619	-	\$ 31,897,982
					2038	\$ 17,759,764	15,605,136	-	\$ 33,364,899
					2039	\$ 18,560,729	16,338,577	-	\$ 34,899,306
					2040	\$ 19,397,818	17,106,490	-	\$ 36,504,308
					2041	\$ 20,272,660	17,910,495	-	\$ 38,183,155
					2042	\$ 21,186,956	18,752,288	-	\$ 39,939,245

**25 Yrs Cumulative**  
\$ 489,780,792

**30 Yrs Cumulative**  
\$ 672,671,705



DWSD Worksheet : 12 MGD Maximum Day Customer with Model Contract at Imlay/Blending with Flint

Capacity

Flint ADD: 4 MGD 535 MCF/Day  
DWSD ADD: 8 MGD 1,070 MCF/Day

Annual Volume

Flint: 195,187 MCF  
DWSD: 390,374 MCF

2013 Cost of Supply

Flint WTP O&M: \$ 30.20 /MCF \$ 5,895,097 /Yr  
DWSD: \$ 14.38 /MCF \$ 5,613,583 /Yr

Escalation/Inflation Rate

Flint: 4.51% /Yr  
DWSD: 4.7% /Yr

Capital Expenditure

Capital: \$ 4,700,000  
Bond Issuance (3% of Total): 195,000 Check: 3.0%  
3 Years of Capitalized Interest: 975,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 650,000 Check: 10.0%  
Total: \$ 6,520,000

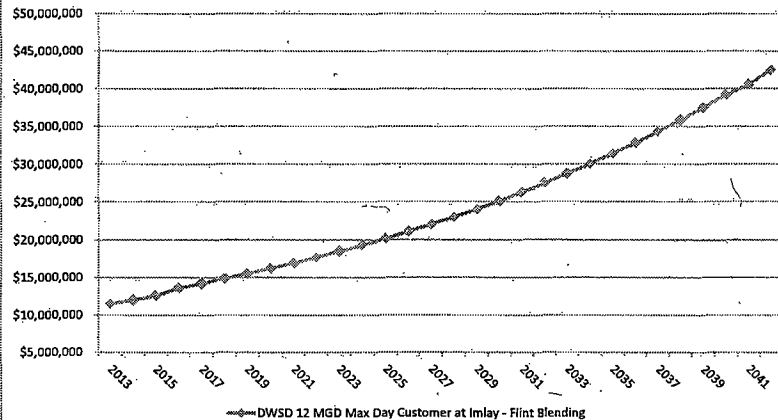
Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$462,610  
Interest on Reserve: 3%

Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
2013	\$ 5,895,097	5,613,583		19,500	\$ 11,489,180
2014	\$ 6,160,966	5,877,421		19,500	\$ 12,018,888
2015	\$ 6,438,826	6,153,660		19,500	\$ 12,572,986
2016	\$ 6,729,217	6,442,882	462,610	19,500	\$ 13,615,209
2017	\$ 7,032,705	6,745,698	462,610	19,500	\$ 14,221,512
2018	\$ 7,349,880	7,062,745	462,610	19,500	\$ 14,855,735
2019	\$ 7,681,359	7,394,694	462,610	19,500	\$ 15,519,164
2020	\$ 8,027,789	7,742,245	462,610	19,500	\$ 16,213,144
2021	\$ 8,389,842	8,106,131	462,610	19,500	\$ 16,939,082
2022	\$ 8,768,224	8,487,119	462,610	19,500	\$ 17,698,452
2023	\$ 9,163,671	8,886,013	462,610	19,500	\$ 18,492,794
2024	\$ 9,576,952	9,303,656	462,610	19,500	\$ 19,323,718
2025	\$ 10,008,873	9,740,928	462,610	19,500	\$ 20,192,910
2026	\$ 10,460,273	10,198,751	462,610	19,500	\$ 21,102,134
2027	\$ 10,932,031	10,678,093	462,610	19,500	\$ 22,053,234
2028	\$ 11,425,066	11,179,963	462,610	19,500	\$ 23,048,139
2029	\$ 11,940,336	11,705,421	462,610	19,500	\$ 24,088,867
2030	\$ 12,478,845	12,255,576	462,610	19,500	\$ 25,177,531
2031	\$ 13,041,641	12,831,588	462,610	19,500	\$ 26,316,339
2032	\$ 13,629,819	13,434,673	462,610	19,500	\$ 27,507,602
2033	\$ 14,244,524	14,066,102	462,610	19,500	\$ 28,753,736
2034	\$ 14,886,952	14,727,209	462,610	19,500	\$ 30,057,271
2035	\$ 15,558,354	15,419,388	462,610	19,500	\$ 31,420,852
2036	\$ 16,260,035	16,144,099	462,610	19,500	\$ 32,847,245
2037	\$ 16,993,363	16,902,872	462,610	19,500	\$ 34,339,345
2038	\$ 17,759,764	17,697,307	462,610	19,500	\$ 35,900,181
2039	\$ 18,560,729	18,529,080	462,610	19,500	\$ 37,532,919
2040	\$ 19,397,818	19,399,947	462,610	19,500	\$ 39,240,875
2041	\$ 20,272,660	20,311,745			\$ 40,584,404
2042	\$ 21,186,956	21,266,397			\$ 42,453,353

25 Yrs Cumulative  
\$ 529,865,071

30 Yrs Cumulative  
\$ 725,576,803

DWSD 12 MGD Maximum Day Customer at Imlay/Blending with Flint



**DWSD Worksheet : 8 MGD Maximum Day Customer with Model Contract at Imlay/Blending with Flint**

<u>Capacity</u>			
Flint ADD:	4	MGD	535 MCF/Day
DWSD ADD:	8	MGD	1,070 MCF/Day

<u>Annual Volume</u>			
Flint:	195,187	MCF	
DWSD:	390,374	MCF	

<u>2013 Cost of Supply</u>			
Flint WTP O&M:	\$ 30.20	/MCF	\$ 5,895,097 /Yr
DWSD:	\$ 11.11	/MCF	\$ 4,337,059 /Yr

<u>Escalation/inflation Rate</u>			
Flint:	4.51%	/Yr	
DWSD:	4.7%	/Yr	

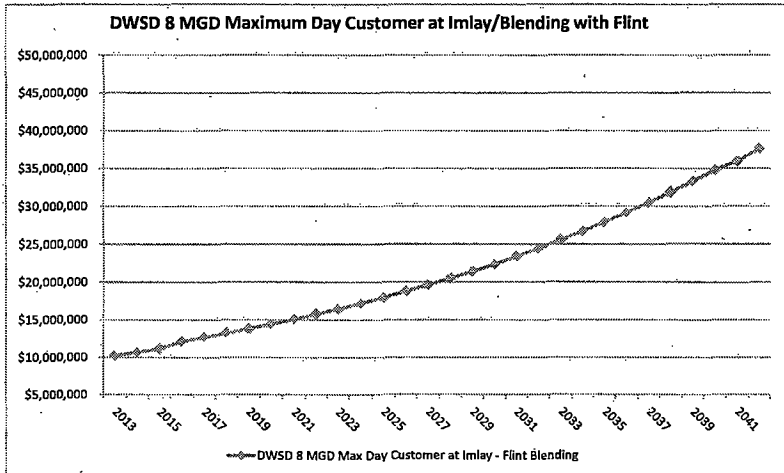
<u>Capital Expenditure</u>			
Capital:	\$ 4,700,000		
Bond Issuance (3% of Total):	195,000	Check:	3.0%
3 Years of Capitalized Interest:	975,000	Check:	5.0% /Yr (Bond Interest on Total)
Reserve (10% of Total):	650,000	Check:	10.0%
Total:	\$ 6,520,000		

Revenue Bond Rate:	5%
Number of Years:	25
Annual Cost:	\$462,610
Interest on Reserve:	3%

Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
2013	\$ 5,895,097	4,337,059		19,500	\$ 10,212,656
2014	\$ 6,160,966	4,540,901		19,500	\$ 10,682,367
2015	\$ 6,438,826	4,754,323		19,500	\$ 11,173,649
2016	\$ 6,729,217	4,977,776	462,610	19,500	\$ 12,150,103
2017	\$ 7,032,705	5,211,732	462,610	19,500	\$ 12,687,546
2018	\$ 7,349,880	5,456,683	462,610	19,500	\$ 13,249,673
2019	\$ 7,681,359	5,713,147	462,610	19,500	\$ 13,837,616
2020	\$ 8,027,789	5,981,665	462,610	19,500	\$ 14,452,564
2021	\$ 8,389,842	6,262,803	462,610	19,500	\$ 15,095,755
2022	\$ 8,768,224	6,557,155	462,610	19,500	\$ 15,768,489
2023	\$ 9,163,671	6,865,341	462,610	19,500	\$ 16,472,122
2024	\$ 9,576,952	7,188,012	462,610	19,500	\$ 17,208,074
2025	\$ 10,008,873	7,525,849	462,610	19,500	\$ 17,977,832
2026	\$ 10,460,273	7,879,564	462,610	19,500	\$ 18,782,947
2027	\$ 10,932,031	8,249,903	462,610	19,500	\$ 19,625,044
2028	\$ 11,425,066	8,637,649	462,610	19,500	\$ 20,505,824
2029	\$ 11,940,336	9,043,618	462,610	19,500	\$ 21,427,064
2030	\$ 12,478,845	9,468,668	462,610	19,500	\$ 22,390,624
2031	\$ 13,041,641	9,913,696	462,610	19,500	\$ 23,398,447
2032	\$ 13,629,819	10,379,639	462,610	19,500	\$ 24,452,569
2033	\$ 14,244,524	10,867,482	462,610	19,500	\$ 25,555,117
2034	\$ 14,886,952	11,378,254	462,610	19,500	\$ 26,708,316
2035	\$ 15,558,354	11,913,032	462,610	19,500	\$ 27,914,496
2036	\$ 16,260,035	12,472,945	462,610	19,500	\$ 29,176,090
2037	\$ 16,993,363	13,059,173	462,610	19,500	\$ 30,495,646
2038	\$ 17,759,764	13,672,954	462,610	19,500	\$ 31,875,828
2039	\$ 18,560,729	14,315,583	462,610	19,500	\$ 33,319,422
2040	\$ 19,397,818	14,988,415	462,610	19,500	\$ 34,829,343
2041	\$ 20,272,660	15,692,871			\$ 35,965,530
2042	\$ 21,186,956	16,430,436			\$ 37,617,392

**25 Yrs Cumulative**  
\$ 493,063,801

**30 Yrs Cumulative**  
\$ 634,795,488

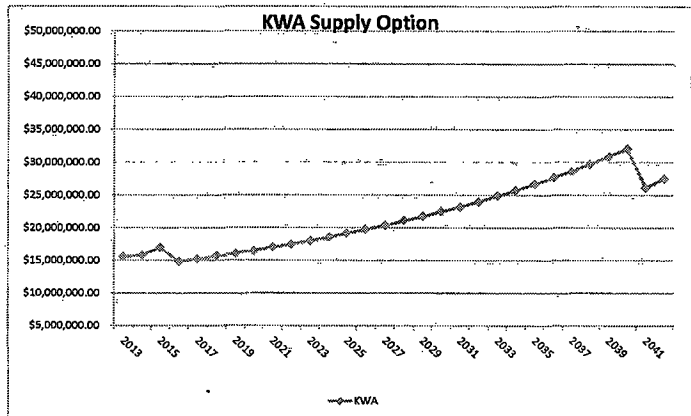


**KWA Supply Option Worksheet**  
KWA 10/31/12 No Overruns

	Year	DWSD & Flint WTP Costs	KWA Entry Fee	KWA Debt service	Flint WTP Debt Service	KWA Operations	Flint WTP Operations with KWA	TOTAL
1	2013	\$ 14,413,858	1,162,800					\$ 15,576,658
2	2014	\$ 15,355,135	581,400					\$ 15,936,535
3	2015	\$ 16,365,534	581,400					\$ 16,946,934
4	2016			6,593,155	572,781	878,869	6,843,344	\$ 14,888,149
5	2017			6,593,155	572,781	922,812	7,185,511	\$ 15,274,260
6	2018			6,593,155	572,781	968,953	7,544,787	\$ 15,679,676
7	2019			6,593,155	572,781	1,017,401	7,922,026	\$ 16,105,363
8	2020			6,593,155	572,781	1,068,271	8,318,127	\$ 16,552,334
9	2021			6,593,155	572,781	1,121,684	8,734,034	\$ 17,021,654
10	2022			6,593,155	572,781	1,177,769	9,170,735	\$ 17,514,440
11	2023			6,593,155	572,781	1,236,657	9,629,272	\$ 18,031,865
12	2024			6,593,155	572,781	1,298,490	10,110,736	\$ 18,575,162
13	2025			6,593,155	572,781	1,363,414	10,616,273	\$ 19,145,623
14	2026			6,593,155	572,781	1,431,585	11,147,086	\$ 19,744,607
15	2027			6,593,155	572,781	1,503,164	11,704,441	\$ 20,373,541
16	2028			6,593,155	572,781	1,578,322	12,289,663	\$ 21,033,921
17	2029			6,593,155	572,781	1,657,239	12,904,146	\$ 21,727,320
18	2030			6,593,155	572,781	1,740,101	13,549,353	\$ 22,455,390
19	2031			6,593,155	572,781	1,827,106	14,226,821	\$ 23,219,862
20	2032			6,593,155	572,781	1,918,461	14,938,162	\$ 24,022,559
21	2033			6,593,155	572,781	2,014,384	15,685,070	\$ 24,865,390
22	2034			6,593,155	572,781	2,115,103	16,469,323	\$ 25,750,362
23	2035			6,593,155	572,781	2,220,858	17,292,789	\$ 26,679,584
24	2036			6,593,155	572,781	2,331,901	18,157,429	\$ 27,635,266
25	2037			6,593,155	572,781	2,448,496	19,065,300	\$ 28,679,733
	2038			6,593,155	572,781	2,570,921	20,018,565	\$ 29,755,422
	2039			6,593,155	572,781	2,699,467	21,019,494	\$ 30,884,897
	2040			6,593,155	572,781	2,834,440	22,070,468	\$ 32,070,845
	2041					2,976,162	23,173,992	\$ 26,150,154
	2042					3,124,970	24,332,691	\$ 27,457,662

**25 Yrs Cumulative**  
\$ 503,456,186

**30 Yrs Cumulative**  
\$ 649,775,166



# KWA Supply Option Worksheet KWA-1

## Capacity

Flint ADD: 12 MGD 1,604 MCF/Day  
KWA ADD: 12 MGD 1,604 MCF/Day

## Annual Volume

Flint: 585,561 MCF  
KWA: 585,561 MCF

## 2016 Cost of Supply

Flint WTP O&M: 13.51 /MCF \$ 7,913,118 /Yr  
KWA: \$ 1.50 /MCF \$ 878,069 /Yr

## Escalation/Inflation Rate

Flint: 4.51% /Yr  
KWA: 5.0% /Yr

## Capital Expenditure

Capital: \$ 272,421,558  
Bond Issuance (2.25% of Total): 8,440,000  
3 Years of Capitalized Interest: 96,000,000  
Reserve (10% of Total): 37,500,000  
Total: \$ 374,361,558  
Flint's Share (30%): \$ 112,308,467

Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$7,968,562  
Interest on Reserve: 3%

Capital: \$ 7,758,362  
Bond Issuance (3% of Total): 240,000  
3 Years of Capitalized Interest: 1,600,000  
Reserve (10% of Total): 1,070,000  
Total: \$ 10,668,362

Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$756,946  
Interest on Reserve: 3%

David Guastella:  
Assumes Bond Issuance and  
Escalation not included

David Guastella:  
Increased by 3%/Yr to  
2012 \$'s

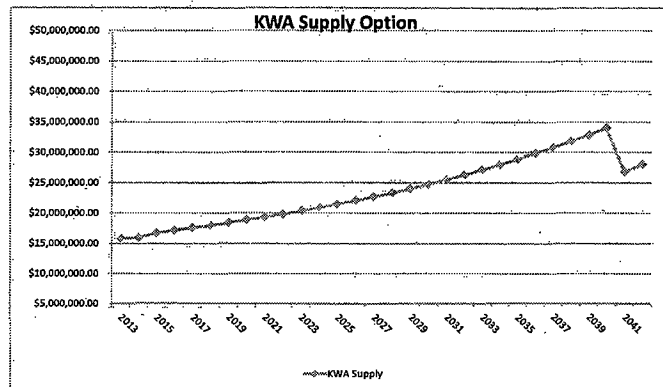
David Guastella:  
Flint buys water from DWSJ for three  
years during KWA construction at  
current rate (assumes 5% increase each  
year)

David Guastella:  
Highlighted portion is Flint's Entry Fee to KWA.

Year	Flint WTP O&M	Water Purchase	KWA Revenue Pre-bond Entry Fee & Bond Payment	Flint Revenue Bond Payment	Interest on Reserve	TOTAL
1 2013	\$ 3,538,214	11,461,700	1,162,800		369,600	\$ 15,793,114
2 2014	\$ 3,697,788	12,034,785	531,400		369,600	\$ 15,944,373
3 2015	\$ 3,864,558	12,636,524	531,400		369,600	\$ 16,712,882
4 2016	\$ 7,913,118	878,069	7,968,562	756,946	369,600	\$ 17,447,896
5 2017	\$ 8,270,000	922,812	7,968,562	756,946	369,600	\$ 17,548,721
6 2018	\$ 8,642,977	968,953	7,968,562	756,946	369,600	\$ 17,967,838
7 2019	\$ 9,032,775	1,017,401	7,968,562	756,946	369,600	\$ 18,406,084
8 2020	\$ 9,440,153	1,068,271	7,968,562	756,946	369,600	\$ 18,864,332
9 2021	\$ 9,865,904	1,121,684	7,968,562	756,946	369,600	\$ 19,343,497
10 2022	\$ 10,310,857	1,177,769	7,968,562	756,946	369,600	\$ 19,844,539
11 2023	\$ 10,775,876	1,236,657	7,968,562	756,946	369,600	\$ 20,368,441
12 2024	\$ 11,261,858	1,298,490	7,968,562	756,946	369,600	\$ 20,916,266
13 2025	\$ 11,769,779	1,363,414	7,968,562	756,946	369,600	\$ 21,489,101
14 2026	\$ 12,300,596	1,431,585	7,968,562	756,946	369,600	\$ 22,088,089
15 2027	\$ 12,855,352	1,503,164	7,968,562	756,946	369,600	\$ 22,714,425
16 2028	\$ 13,435,129	1,578,322	7,968,562	756,946	369,600	\$ 23,369,359
17 2029	\$ 14,041,053	1,657,239	7,968,562	756,946	369,600	\$ 24,054,200
18 2030	\$ 14,674,305	1,740,101	7,968,562	756,946	369,600	\$ 24,770,313
19 2031	\$ 15,336,116	1,827,106	7,968,562	756,946	369,600	\$ 25,519,130
20 2032	\$ 16,027,775	1,918,461	7,968,562	756,946	369,600	\$ 26,302,144
21 2033	\$ 16,750,627	2,014,384	7,968,562	756,946	369,600	\$ 27,120,919
22 2034	\$ 17,506,080	2,115,103	7,968,562	756,946	369,600	\$ 27,977,092
23 2035	\$ 18,295,605	2,220,858	7,968,562	756,946	369,600	\$ 28,872,371
24 2036	\$ 19,120,737	2,331,901	7,968,562	756,946	369,600	\$ 29,808,546
25 2037	\$ 19,983,082	2,448,496	7,968,562	756,946	369,600	\$ 30,787,486
2038	\$ 20,884,319	2,570,921	7,968,562	756,946	369,600	\$ 31,811,148
2039	\$ 21,826,201	2,699,467	7,968,562	756,946	369,600	\$ 32,881,577
2040	\$ 22,810,563	2,834,440	7,968,562	756,946	369,600	\$ 34,000,912
2041	\$ 23,839,320	2,976,162				\$ 26,815,482
2042	\$ 24,914,473	3,124,970				\$ 28,039,443

25 Yrs Cumulative:  
\$ 553,731,153

30 Yrs Cumulative:  
\$ 707,279,715



KWA Supply Option Worksheet  
KWA-2

**Capacity**  
Flint ADD: 12 MGD 1,604 MCF/Day  
KWA ADD: 12 MGD 1,604 MCF/Day

**Annual Volume**  
Flint: 585,561 MCF  
KWA: 585,561 MCF

**2016 Cost of Supply**  
Flint WTP O&M: \$ 13.51 /MCF \$ 7,913,118 /Yr  
KWA: \$ 1.50 /MCF \$ 878,869 /Yr

**Escalation/Inflation Rate**  
Flint: 4.51% /Yr  
KWA: 5.0% /Yr

**Capital Expenditure**

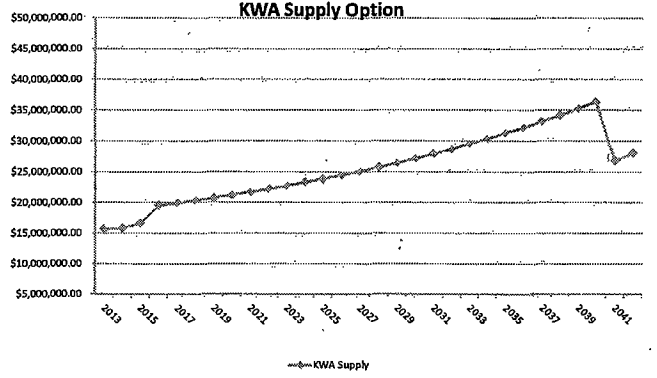
Capital: \$ 957,578,060  
Bond Issuance (2.25% of Total): 11,050,000 Check: 2.25%  
3 Years of Capitalized Interest: 74,000,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 49,028,060 Check: 10.0%  
Total: \$ 491,628,060  
Flint's Share (80%) \$ 147,488,418  
Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$10,464,666  
Interest on Reserve: 3%

Capital: \$ 7,759,962  
Bond Issuance (3% of Total): 240,000 Check: 2.25%  
3 Years of Capitalized Interest: 1,600,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 1,070,000 Check: 10.0%  
Total: \$ 10,669,962  
Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$756,946  
Interest on Reserve: 3%

KWA Revenue  
Pre-bond Entry

Year	Flint WTP O&M	Water Purchase	Fee & Bond Payment	Flint Revenue Bond Payment	Interest on Reserve	TOTAL
1 2013	\$ 3,538,214	11,461,700	11,461,700		473,100	\$ 15,689,614
2 2014	\$ 3,697,788	12,034,785	12,034,785		473,100	\$ 15,840,873
3 2015	\$ 3,864,558	12,636,524	12,636,524		473,100	\$ 16,609,382
4 2016	\$ 7,913,118	878,869	10,464,666	756,946	473,100	\$ 19,540,500
5 2017	\$ 8,270,000	922,812	10,464,666	756,946	473,100	\$ 19,941,325
6 2018	\$ 8,642,977	968,953	10,464,666	756,946	473,100	\$ 20,360,442
7 2019	\$ 9,032,775	1,017,401	10,464,666	756,946	473,100	\$ 20,798,688
8 2020	\$ 9,440,153	1,068,271	10,464,666	756,946	473,100	\$ 21,256,936
9 2021	\$ 9,865,904	1,121,684	10,464,666	756,946	473,100	\$ 21,736,101
10 2022	\$ 10,310,857	1,177,769	10,464,666	756,946	473,100	\$ 22,237,137
11 2023	\$ 10,775,876	1,236,657	10,464,666	756,946	473,100	\$ 22,761,045
12 2024	\$ 11,261,868	1,298,490	10,464,666	756,946	473,100	\$ 23,308,870
13 2025	\$ 11,769,779	1,363,414	10,464,666	756,946	473,100	\$ 23,881,705
14 2026	\$ 12,300,596	1,431,585	10,464,666	756,946	473,100	\$ 24,480,693
15 2027	\$ 12,855,352	1,503,164	10,464,666	756,946	473,100	\$ 25,107,029
16 2028	\$ 13,435,129	1,578,322	10,464,666	756,946	473,100	\$ 25,761,963
17 2029	\$ 14,041,053	1,657,239	10,464,666	756,946	473,100	\$ 26,446,804
18 2030	\$ 14,674,305	1,740,101	10,464,666	756,946	473,100	\$ 27,162,917
19 2031	\$ 15,336,116	1,827,106	10,464,666	756,946	473,100	\$ 27,911,733
20 2032	\$ 16,027,775	1,918,461	10,464,666	756,946	473,100	\$ 28,694,748
21 2033	\$ 16,750,627	2,014,384	10,464,666	756,946	473,100	\$ 29,513,523
22 2034	\$ 17,506,080	2,115,103	10,464,666	756,946	473,100	\$ 30,369,696
23 2035	\$ 18,295,605	2,220,858	10,464,666	756,946	473,100	\$ 31,264,975
24 2036	\$ 19,120,737	2,331,901	10,464,666	756,946	473,100	\$ 32,201,150
25 2037	\$ 19,983,082	2,448,496	10,464,666	756,946	473,100	\$ 33,180,090
2038	\$ 20,884,319	2,570,921	10,464,666	756,946	473,100	\$ 34,203,752
2039	\$ 21,826,201	2,699,467	10,464,666	756,946	473,100	\$ 35,274,181
2040	\$ 22,810,563	2,834,440	10,464,666	756,946	473,100	\$ 36,399,516
2041	\$ 23,839,320	2,976,162				\$ 26,815,482
2042	\$ 24,914,473	3,124,970				\$ 28,039,443

KWA Supply Option



25 Yrs Cumulative  
\$ 606,057,940

30 Yrs Cumulative  
\$ 766,784,313



**DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contract Twinning Line and Owning both to the Flint WTP**

Capacity

Flint ADD: 0.00 MGD - MCF/Day  
 DWSD ADD: 12 MGD 1,604 MCF/Day

Annual Volume

Flint: - MCF  
 DWSD: 585,561 MCF

2013 Cost of Supply

Flint WTP O&M: - /MCF \$ - /Yr  
 DWSD: \$ 17.08 /MCF \$ 10,001,390 /Yr

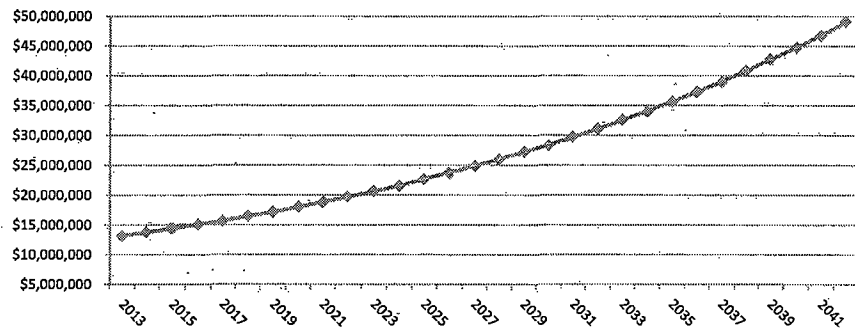
Escalation/Inflation Rate

Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

Capital Expenditure

Amount: \$ -  
 Reserve: \$ - 0% Reserve Rate: 0.00%  
 Amount plus Reserve: \$ -  
 Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$0

**DWSD 18 MGD Maximum Day Customer Twinning Option DWSD  
Owns Both Lines**



	Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
1	2013	\$ -	10,001,390	-	-	\$ 10,001,390
2	2014	\$ -	10,471,456	-	-	\$ 10,471,456
3	2015	\$ -	10,963,614	-	-	\$ 10,963,614
4	2016	\$ -	11,478,904	-	-	\$ 11,478,904
5	2017	\$ -	12,018,412	-	-	\$ 12,018,412
6	2018	\$ -	12,583,278	-	-	\$ 12,583,278
7	2019	\$ -	13,174,692	-	-	\$ 13,174,692
8	2020	\$ -	13,793,902	-	-	\$ 13,793,902
9	2021	\$ -	14,442,216	-	-	\$ 14,442,216
10	2022	\$ -	15,121,000	-	-	\$ 15,121,000
11	2023	\$ -	15,831,687	-	-	\$ 15,831,687
12	2024	\$ -	16,575,776	-	-	\$ 16,575,776
13	2025	\$ -	17,354,838	-	-	\$ 17,354,838
14	2026	\$ -	18,170,515	-	-	\$ 18,170,515
15	2027	\$ -	19,024,529	-	-	\$ 19,024,529
16	2028	\$ -	19,918,682	-	-	\$ 19,918,682
17	2029	\$ -	20,854,860	-	-	\$ 20,854,860
18	2030	\$ -	21,835,039	-	-	\$ 21,835,039
19	2031	\$ -	22,861,286	-	-	\$ 22,861,286
20	2032	\$ -	23,935,766	-	-	\$ 23,935,766
21	2033	\$ -	25,060,747	-	-	\$ 25,060,747
22	2034	\$ -	26,238,602	-	-	\$ 26,238,602
23	2035	\$ -	27,471,816	-	-	\$ 27,471,816
24	2036	\$ -	28,762,992	-	-	\$ 28,762,992
25	2037	\$ -	30,114,852	-	-	\$ 30,114,852
	2038	\$ -	31,530,250	-	-	\$ 31,530,250
	2039	\$ -	33,012,172	-	-	\$ 33,012,172
	2040	\$ -	34,563,744	-	-	\$ 34,563,744
	2041	\$ -	36,188,240	-	-	\$ 36,188,240
	2042	\$ -	37,889,088	-	-	\$ 37,889,088

**25 Yrs Cumulative**  
 \$ 458,060,853

**30 Yrs Cumulative**  
 \$ 631,244,349

**DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contract Twinning Line and Owning Only New Line to the Flint WTP**

Capacity

Flint ADD: 0.00 MGD - MCF/Day  
 DWSD ADD: 12 MGD 1,604 MCF/Day

Annual Volume

Flint: - MCF  
 DWSD: 585,561 MCF

2013 Cost of Supply

Flint WTP O&M: - /MCF \$ - /Yr  
 DWSD: \$ 17.40 /MCF \$ 10,188,770 /Yr

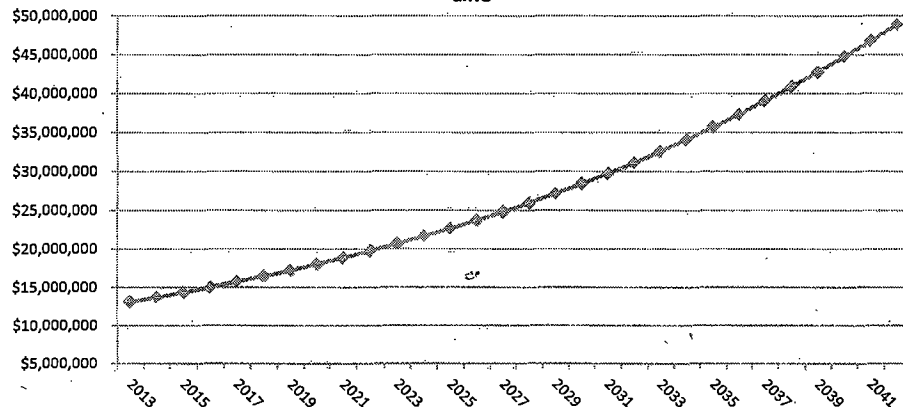
Escalation/Inflation Rate

Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

Capital Expenditure

Amount: \$ -  
 Reserve: \$ - 0% Reserve Rate: 0.00%  
 Amount plus Reserve: \$ -  
 Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$0

**DWSD 18 MGD Maximum Day Customer Twinning Option DWSD Owns New Line**

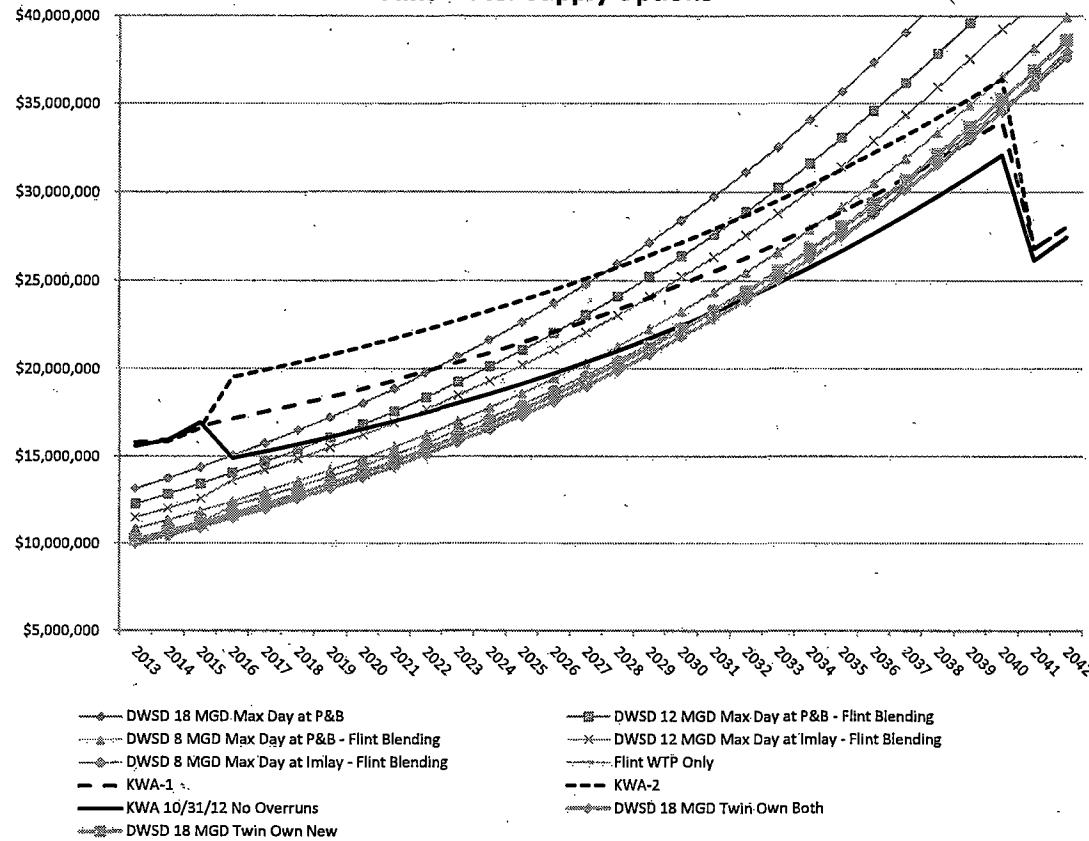


	Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
1	2013	\$ -	10,188,770			\$ 10,188,770
2	2014	\$ -	10,667,642			\$ 10,667,642
3	2015	\$ -	11,169,021			\$ 11,169,021
4	2016	\$ -	11,693,965			\$ 11,693,965
5	2017	\$ -	12,243,582			\$ 12,243,582
6	2018	\$ -	12,819,030			\$ 12,819,030
7	2019	\$ -	13,421,525			\$ 13,421,525
8	2020	\$ -	14,052,336			\$ 14,052,336
9	2021	\$ -	14,712,796			\$ 14,712,796
10	2022	\$ -	15,404,297			\$ 15,404,297
11	2023	\$ -	16,128,299			\$ 16,128,299
12	2024	\$ -	16,886,330			\$ 16,886,330
13	2025	\$ -	17,679,987			\$ 17,679,987
14	2026	\$ -	18,510,946			\$ 18,510,946
15	2027	\$ -	19,380,961			\$ 19,380,961
16	2028	\$ -	20,291,866			\$ 20,291,866
17	2029	\$ -	21,245,584			\$ 21,245,584
18	2030	\$ -	22,244,126			\$ 22,244,126
19	2031	\$ -	23,289,600			\$ 23,289,600
20	2032	\$ -	24,384,211			\$ 24,384,211
21	2033	\$ -	25,530,269			\$ 25,530,269
22	2034	\$ -	26,730,192			\$ 26,730,192
23	2035	\$ -	27,986,511			\$ 27,986,511
24	2036	\$ -	29,301,877			\$ 29,301,877
25	2037	\$ -	30,679,065			\$ 30,679,065
	2038	\$ -	32,120,981			\$ 32,120,981
	2039	\$ -	33,630,667			\$ 33,630,667
	2040	\$ -	35,211,309			\$ 35,211,309
	2041	\$ -	36,866,240			\$ 36,866,240
	2042	\$ -	38,598,953			\$ 38,598,953

**25 Yrs Cumulative**  
 \$ 466,642,790

**30 Yrs Cumulative**  
 \$ 643,070,941

### Flint Water Supply Options



Option	Costs through 2042	Ranking
Flint WTP Only	\$ 590,441,893	1
DWSD 8 MGD Max Day at Imlay	\$ 634,795,488	2
KWA 10/31/12 Update	\$ 649,775,166	3
DWSD 8 MGD Max Day at P&B	\$ 672,671,705	4
KWA-1	\$ 707,279,715	5
DWSD 12 MGD Max Day at Imlay	\$ 725,576,803	6
DWSD 12 MGD Max Day at P&B	\$ 762,110,308	7
KWA-2	\$ 786,784,313	8
DWSD 18 MGD Max Day at P&B	\$ 821,226,268	9
DWSD 18 MGD Max Twin Own Both	\$ 631,244,349	
DWSD 18 MGD Max Own New Line	\$ 643,070,941	

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## Genesee county board sets press conference discussing Flint's water crisis



Flint City Administrator Natasha Henderson speaks during a committee meeting with Flint City Council members about the city's ongoing water problems at Flint City Hall in Flint, Mich. on Monday Sept. 28, 2015. (Christian Randolph/Flint Journal)

1 / 10



By [Jiquanda Johnson](#) | [johns16@mlive.com](mailto:johns16@mlive.com)

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on October 01, 2015 at 12:12 PM

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**GENESEE COUNTY, MI** – The Genesee County Board of Commissioners has called a press conference for 3 p.m. today in hopes of pressuring Gov. Rick Snyder to declare a state of emergency in Flint's water crisis.

County leaders said they also plan to discuss a water advisory the county issued earlier this week for Flint water customers and plans for more than 5,000 water filters to be distributed to Flint residents after reports of elevated lead levels in children.

### FLINT RIVER WATER

[Flint data on lead water lines stored on 45,000 index cards](#)

[More than 5,000 in Flint to get lead water filters following donation](#)

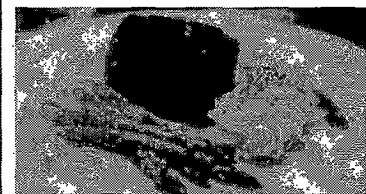
[Flint CFO says trend of customers not paying water bills is continuing](#)

[Flint tavern offering free drinks for water donations](#)

[Legislative Black Caucus urges state of emergency for Flint water](#)



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- Guide to more Michigan's Best

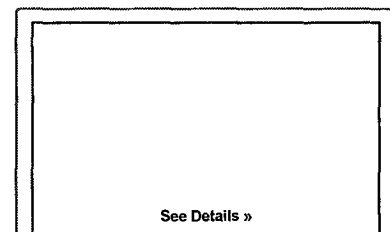
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"Nobody has refuted the doctors' testing of lead in babies and young children," said

Commissioner Jamie Curtis. "No one's data has neutralized that this isn't a health issue. This is no longer about water. It's about stepping up and addressing the health issue. If you have lead in the water, it's irreversible. Even if it doesn't show up today, it's going to show up later."

On Tuesday, Sept. 29, the county issued a **public health advisory** for people using water supplied by the city of Flint after reports concerning rising levels of lead in children.

The city of Flint declared a health advisory last week after reports from Hurley Medical Center doctors said elevated lead levels had doubled since the city began using water from the Flint River.

Commissioners Brenda Clack and Bryant Nolden along with Curtis are holding the conference at 3 p.m. at the Genesee County Administration Building located at 1101 Beach Street in Flint to discuss the issue.

Curtis says the lead testing results have called for even more concern and county officials hope that the press conference will push Gov. Rick Snyder to declare a state of emergency.

The county's health advisory warns that lead exposure can cause brain damage, stunted growth and hearing problems in children.

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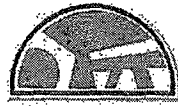
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## ROWE PROFESSIONAL SERVICES COMPANY

*Large Firm Resources. Personal Attention.*

January 7, 2013

Mr. Edward Kurtz, Emergency Financial Manager  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502

Subject: Review of December 21, 2012 Presentation – City of Flint Water Supply Assessment

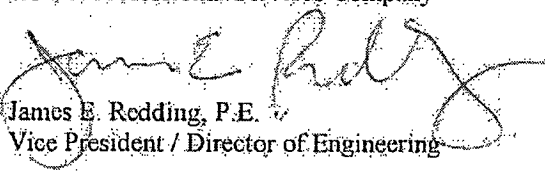
Dear Mr. Kurtz:

As requested, we have reviewed the analysis of water supply alternatives for the City of Flint which was presented to the State Department of Treasury by Tucker, Young, Jackson, and Tull, Inc. (TYJT) on December 21, 2012. Our review is attached and summarizes the primary differences between the TYJT assessment and our previous studies and provides explanations of why we believe there are differences.

We have also reviewed the options for continued DWSD supply included in the TYJT presentation. It is not clear whether these are presented as specific offers on behalf of DWSD or included as examples for analysis, but we have noted some items which we believe should be addressed and considered as these options are compared.

If there are questions, please contact me.

Sincerely,  
ROWE Professional Services Company

  
James E. Redding, P.E.  
Vice President / Director of Engineering

Attachment

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**Review of TYJT December 21, 2012 Presentation  
City of Flint Water Supply Assessment  
Prepared by Rowe Professional Services Company**

**DWSD Supply (Slides 7 through 9)**

1. The 8 mgd maximum day supply by DWSD options can result in periods during the summer when most of the water to meet demands will be supplied by the City from the river. To aid in maintaining a consistent water quality, softening of the water from the river should be provided with this option, greatly increasing the City's costs.
2. Upgrades to Flint's WTP and dams will be needed for options requiring blending, since the WTP will be required to provide continuous, reliable service and compliance with recent surface water treatment regulations.
3. The rates for the options analyzed are shown on Slide 9 as "TYJT Estimates". Options and rates shown are different than presented by DWSD previously.

	DWSD 11/29/2012	TYJT Estimates
18 mgd Maximum Day - P&B	\$16.24	\$16.37
12 mgd Maximum Day - P&B	\$16.30	\$16.31
8 mgd Maximum Day - P&B		\$12.68
12 mgd Maximum Day - Imlay	\$14.38	\$14.38
8 mgd Maximum Day - Imlay		\$11.11

4. Since the rates used in the analyses are shown as estimates, are they actual offers or just presented as "what if" scenarios?
5. We assume that the Imlay options are based on transfer of the 72" main through Lapeer County to Flint. The analyses show a capital cost of \$4.7 million; we assume that this is the proposed purchase / lease cost to Flint. This should be clarified along with pertinent details.
6. If the transmission main is transferred to Flint, what are Flint's responsibilities regarding service to the Lapeer County customers? If they remain DWSD customers, then Flint should receive some revenue for the use the main. It does not appear this is included in the TYJT analyses.
7. If the transmission main is transferred to Flint, we assume that the city will be responsible for the maintenance of the 50 year old main. The TYJT analysis did not include this.
8. Do the rates shown include the credit for "reliability" which had been discussed with DWSD?
9. If the point of commerce is changed from Baxter and Potter to Imlay, a new meter pit will be required. The cost of this does not appear to be included in the TYJT cost analyses.

#### **Flint River Supply (Slide 10)**

1. If any of the "blending" options are chosen, it will be necessary to upgrade the Flint WTP and dams to provide reliable, continuous service and compliance with recent surface water treatment regulations.

#### **Data Collected (Slide 14)**

1. The slide notes that Flint blending is based on DWSD supplying 2/3 and Flint supplying 1/3 of 12 MGD ADD. For the maximum day demand (18 mgd), if DWSD supplies a maximum of 8 mgd, Flint will supply 10 mgd or 56% of the total. However, such a large portion will make it more difficult to blend and achieve consistent water quality. Flint will need to soften water for these options.

#### **Benchmarking Comparisons (Slide 16)**

1. The slide subtitles are "KWA O&M Inflation Factor" and "DWSD and Flint Rate Inflation Factor". It seems appropriate to benchmark O&M costs for the KWA, because future costs of service will be dependent on how operating costs are impacted by inflation. For Flint, it does not seem appropriate that "rate inflation" from other utilities be used to determine the impact of inflation on future cost of service. Rates are impacted by inflation, but also by other factors such as debt and customer base. O&M expenses and rates are different and care should be exercised not to mix the two during analyses. The TYJT analyses apply an inflation factor (based on rates from other utilities) to the Flint WTP operating expenses, which does not seem to be consistent.
2. The KWA will supply raw water; SOCWA and YUCA both supply finished water. Regulations impact the O&M for finished water suppliers but should not impact the KWA O&M. The use of data from SOCWA and YUCA does not seem like a comparable comparison with the KWA. Finished water suppliers will have increased costs due to regulatory compliance, which really are not due to "inflation" of the costs of wages, power, chemicals, etc.
3. DWSD has a history of rates to Flint and other suburban wholesale customers. Rates tend to be quite specific to each utility, based on much more than just the costs of operating and maintenance. It appears that DWSD historical rates have not been considered in projecting future DWSD rate increases.

#### **Capital Financing (Slide 17)**

1. KWA bonds are planned to be general obligation bonds, backed by member counties.

#### **O&M Inflation Factor (Slide 20)**

1. SOCWA and YUCA are finished water suppliers; ever-changing regulatory requirements will impact their operating costs more than a raw water supplier, such as KWA.
2. KWA will be a supplier of raw water. O&M costs should primarily be limited to power and labor, with a little chemical use for zebra mussel control. KWA will not provide treatment of the water.



3. The KWA study assumed power, labor, and chemical costs increase at an annual average of 3%. TYJT indicated this is too low and suggested 5%.
4. Following are examples of historical inflation, which support the 3% as a reasonable assumption for O&M expenses (not rates)
  - a. Labor- GCDC-WWS labor costs have increased at an annual average rate of 2.5% since 2003
  - b. Electricity Rates in Michigan (per U.S. Energy Information Administration) have increased an average of 3.2% since 1999.
  - c. The U.S. Bureau of Labor Statistics indicates that the inflation rate over the last 30 years has been an average of 2.8%.

#### **Finished Water Rate Inflation (Slide 21)**

1. TYJT bases their assumptions for rate inflation on a survey of rates from three other water suppliers, but ignored the actual rate history of DWSD. TYJT assumed DWSD rate increases of 4.4% annually (if water is purchased from P&B) and 2.9% annually (if water is purchased from Inlay). Based on the actual charges by DWSD to Flint, DWSD historical rates are as follows:
  - a. 10 year increase in DWSD rates to Flint: 10.5% annually
  - b. Average annual increase through 45 year history: 6.7%
2. Note that for the KWA analyses, an inflation factor has just been applied to power, labor, and chemicals. Although higher prices for labor, power, and chemicals impacts utility rates, rates are impacted by many other factors, many of which are not related to inflation. Rate inflation will likely be different than O&M inflation. Other factors impacting rates:
  - a. Debt – the amount of debt varies widely between utilities.
  - b. Number of customers / quantity of water sold – there are many fixed expenses with a utility, that if are distributed amongst more users/more gallons sold will result in lower rates. Conversely, if there are fewer users or less water sold, the rates are higher. Assumptions regarding future water consumption will have a great impact on "rate inflation".
3. Unlike KWA and Flint operating expenses which will increase over time based on inflation, the cost of continued DWSD service should be based on the inflation of DWSD rates, to include the increasing cost of other DWSD expenses such as debt and the impact of reduced customers / demands in addition to increasing O&M expenses.
4. Even though there could be a one-time reduction in DWSD rates through adopting the model contract, limiting peak demands, and or changing the point of commerce, it doesn't seem reasonable to assume that subsequent annual increases will only average 4.4% through the 30 year period of analysis. This is significantly less than historical performance (yet TYJT suggests that inflation for KWA O&M expenses will increase at almost double the rate of historical indicators).

### Capital Financing with Revenue Bonds (Slide 24)

1. Note that the KWA bonds will be general obligation bonds backed by the member counties.
2. The 2009 KWA Study assumed 6%, 25 year financing. The interest rate for planning was reduced in the 2012 Study update to 5%, which is still higher than if bonds were sold today.
3. Financial consultants determined the charges for purchasing capacity in the KWA supply based on the estimated project cost plus appropriate financing costs. Based on 60 units of capacity, \$538,764,000 will be generated for repayment of debt and project costs using the capacity charges in the KWA capacity agreement.  

25 years * 60 units * \$355,300 / unit =	\$532,950,000
3 years * 60 units * \$32,300 / unit =	<u>\$ 5,814,000</u>
	\$538,764,000
4. For a KWA project cost of \$272,421,558, total P&I is \$483 million. The difference of \$55,500,000 is available for financing expenses (capitalized interest, bond issuance costs, etc.) and additional contingencies.
5. Bond holder reserve is not a requirement for general obligation bonds.
6. TYJT assumed that 3% interest would be earned on the bond holder reserve during the 25 year bond period. Current interest rates are less than 1% and it seems inappropriate to assume such a high rate will be earned on retained funds.
7. Bondholder reserve, if provided, should be applied against the last couple of P&I payments. The TYJT did not apply it. This will reduce their project costs.

### KWA Construction (Slides 26 through 29)

TYJT has indicated that the KWA construction cost estimate is too low. The primary differences in cost estimates for the project appear to be the following components:

1. Pump Stations (Slide 27) – The TYJT estimate for the pump stations is more than double that used by the KWA (\$54,573,314 vs. \$24,618,080). KWA estimates were based on actual construction costs from recent projects completed by Genesee County within the last eight years.
  - a. 32mgd water pump station including two-10 MG ground storage tanks - \$13.4 million
  - b. 80 mgd wastewater pump station, 50 feet deep wetwell – \$8.3 million
  - c. 30 mgd wastewater pump station, 50 feet deep wetwell – \$9.4 million

The KWA budgeted amount seems reasonable for two pumping stations as currently planned and to be constructed in rural areas (not southeast Michigan).

2. Redundant Power – There is no need for redundant power; other provisions will provide reliability of supply.
3. Land – Preliminary engineering has continued so earlier budgets established for planning for land acquisition can be greatly reduced. Options have been obtained on all properties which must be

purchased, so purchase prices are known. It will be necessary to obtain easements for only two miles of pipeline construction. All land costs are now estimated at \$1.25 million.

4. Engineering, Legal, Administration & Contingencies

- a. The October 2012 KWA estimate provided an allowance of 25% of construction cost to cover engineering, legal, administration, and contingencies (ELAC). This was reduced from the 38% allowance used in the 2009 Study because ongoing planning and design have firmed up many of the details of the project, including:

- i. The intake design has been completed and all regulatory permits obtained.
- ii. The transmission main route has been determined. Meetings with road agencies have firmed up the requirements for construction and restoration within rights-of-way. Environmental review and permitting are in process.

- b. TYJT costs for Intake Crib, Pump Stations, and Transmission Mains (Slide 30) include a 30% allowance for ELAC. These allowances (from Slides 26 through 28) total \$72,139,566. In addition, Slide 30 provides the following additional ELAC costs in the project total:

Design Engineering / Pump Stations	\$16,939,581
Construction Management	\$14,434,410
Administration	\$ 349,440
Legal	\$ 831,000
Total	\$32,554,431

- c. Combining this with the \$72,139,566 totals \$104,693,997 or 43% of the estimated construction cost. We believe that such a high allowance for ELAC is not appropriate for a project of this magnitude where preliminary engineering and some design have already been completed.

**Cost Comparison (Slide 30)**

1. The TYJT pump station price is too high based on costs of similar projects; costs used by KWA are based on costs of recent local projects. The KWA estimate is believed to be sufficient for the proposed pumping stations.
2. Redundant power is not required; this does not need to be included in the TYJT estimate.
3. Land for LHPS – actual price is \$360,000
4. Design Engineering / PS and Transmission – KWA included engineering in the 25% ELAC allowance included in the \$207,752,895 estimated cost of transmission mains; TYJT included engineering in their 30% ELAC allowance included in the \$218,811,559 estimated cost. By adding \$16,939,581 for design engineering, \$14,434,609 for construction administration, \$349,440 for administration, and \$831,000; it seems that ELAC is being “double-counted”. The TYJT 43% allowance for ELAC seems unwarranted for a project with a great deal of preliminary and design engineering completed. The 25% KWA allowance is believed to be sufficient.
5. Easements and land (other than LHPS) should total \$1,140,000, based on current options and specific needs for easements.

### Other Considerations – Redundancy / Reliability (Slide 33)

1. Unfunded Mandates/ Future Regulations
  - a. The proposed KWA supply will deliver raw water; it is not anticipated to be affected by future changes to regulations. Regulations will impact the City of Flint with respect to treatment and/or distribution of finished water. The City will be subject to these requirements with any of the DWSD blending options, just as they will be responsible for them if supplied by KWA. Some compliance costs may actually be less with the higher quality Lake Huron water rather than Flint River water as the source.
2. State Goals
  - a. The TYJT presentation indicates that creation of a new raw water supply is contrary to the governor's goals as suggested. However, the development of a new raw water supply provides new opportunities. Communities in Sanilac, St. Clair, and Lapeer counties will have the option to join a regional water supply and replace their small local supplies where limited supplies and high concentrations of arsenic have been a concern. The new water supply also provides great economic development opportunities. The raw water supplied by KWA will make a new commodity, raw water, available to the region. A large, low-cost supply of raw water can be a valuable resource for industries and agribusinesses. The development of a new water supply will also create construction jobs through the short term period of building the new water supply and subsequently over a longer period as new businesses and industries are developed in the area.
  - b. The City of Flint and area communities will benefit as permanent jobs are created for operating and maintaining the local treatment facilities.
3. Redundancy
  - a. We agree that the KWA and DWSD options are similar with respect to redundancy. Both provide the primary water supply; customers are responsible for their backup supply.

### Other Considerations – Cost Slide 34

1. TYJT indicates that the DWSD 8 mgd supply option is the least cost alternative.
  - a. The TYJT analysis does not include the cost of needed upgrades to the City's WTP or increased operating costs in their analysis. During summer months, water from the river will need to be softened before blending. More than half of the water supplied will be provided from the river. When the cost of upgrades to the WTP and the increased operating costs (for softening) are added to the TYJT analysis, the KWA option is less than the DWSD 8 mgd option.
2. For any of the DWSD "blending" options, upgrades will need to be made at the WTP to provide for continuous, reliable operation and compliance with new surface water treatment rules. Increased capital and operating costs for treating water from the river should be added to the TYJT costs for comparison with the other options.
3. Water from the river will require greater effort to treat than water from Lake Huron (more chemicals, power, and residuals). The TYJT analysis shows about the same O&M costs for the Flint WTP, regardless of water source. It seems that the WTP O&M costs for the KWA options should be reduced to reflect the savings from treating Lake Huron water.

4. The TYJT presentation noted that the KWA analysis did not include allowances for mechanical and process improvements within the planning period. The KWA will supply raw water. The facilities consist of pipe, pumps, and a tank. There are no treatment facilities which would be susceptible to future regulatory changes. The only improvements that seem likely would be the need to provide additional capacity. Capacity expansion is planned to be financed through capacity charges to new users.
5. The provision for redundant connections between the City's water system and the GCDC system was included in the most recent water supply agreement between the two, in 2011. Although not a KWA cost, the cost of the redundant connections should be considered with all options.
6. The \$2.3 million budgeted for land by KWA was intended to cover all land requirements. Since the October update, options have been obtained on all land to be purchased and the locations of easements needed has been finalized. Total land costs are now estimated to be about \$1.5 million.
7. The 2004 study included a 47% allowance for engineering, legal, administration, and contingencies (ELAC). The 2009 study reduced the allowance for ELAC to 37% because many of the details since the 2004 conceptual study had been better defined. For the October 2012 update, the allowance for ELAC was reduced to 25% because continued planning and preliminary engineering further addressed details from the earlier concepts.
  - a. The detailed design (plans and specifications) and permitting have been completed.
  - b. The transmission main route has been finalized. Meetings with road agencies have established requirements for construction and restoration within road rights-of-way. Environmental permitting is in process. The primary remaining unknown is pipe sizing, which is largely dependent on Flint's participation.

It is our experience that the 25% ELAC allowance is appropriate for a project of this magnitude at this stage in the planning / design stage. The 43% ELAC allowance recommended by TYJT is excessive for a project in the design phase.

8. Flint's WTP as a backup to the KWA will be less difficult to provide for than the current arrangement as a backup to DWSD. We believe there is potential for challenges with chemistry and treatment for the proposed DWSD blending options, too.
9. It doesn't seem that oversizing the KWA capacity is a good solution for the city's water loss problems, if that is what is being suggested.
10. Yes, it would be nice if the KWA system could be constructed to firmly determine its cost and time to complete before making a decision about water supply alternatives. However, a decision is needed regarding Flint's participation so that the sizing and design can be completed before it can be built.

**Project Costs - FYJT Slides 26 through 30**

	KWA	FYJT
Intake and Crib		
Construction	\$22,076,850	\$22,076,850
ELAC	\$5,519,213	\$5,519,213
Property	\$2,300,000	\$2,300,000
Pumping Stations		
Construction	\$24,618,080	\$54,573,314
Land		\$75,000
ELAC	\$6,154,520	\$16,394,494
Transmission Mains		
Construction	\$166,202,316	\$167,419,530
ELAC	\$41,550,579	\$50,225,859
Easements		\$1,166,170
Engineering		
Design Engineering		\$16,939,581
Construction Management		\$14,434,609
Administration		\$349,440
Legal / Easements / Contracts		\$831,000
Power	\$4,000,000	\$4,000,000
Redundant Power		\$1,273,200
Total Construction	\$212,897,246	\$244,069,694
Total ELAC	\$53,224,312	\$104,694,196
Total Land / Property / Easements	\$2,300,000	\$3,541,170
Total Power	\$4,000,000	\$4,000,000
Total Redundant Power	\$0	\$1,273,200
Total	\$272,421,558	\$357,578,260
ELAC as % of Construction	25.0%	42.9%

Option	TYJT Total Cost	TYJT minus additional costs of river treatment	TYJT minus additional costs of river treatment plus redundant Flint-GCDC connections	TYJT minus additional costs of river treatment plus redundant connections less KWA reserve	TYJT minus additional costs of river treatment plus redundant connections less TYJT financing	TYJT plus Flint WTP	Adjusted Total Cost	Ranking
1 Flint WTP Only	\$590,441,893						\$590,441,893	3
2 DWSD 8 MGD Max Day at Inlay	\$621,211,298					\$771,289,948	\$771,289,948	5
3 KWA 10/31/12 Update	\$649,775,166	\$534,615,996	\$554,555,960				\$554,555,960	1
4 DWSD 8 MGD Max Day at P&B	\$657,167,877					\$807,246,527	\$807,246,527	6
5 KWA-1	\$707,279,715	\$592,120,545	\$612,060,509		\$572,731,459		\$572,731,459	2
6 DWSD 12 MGD Max Day at Inlay	\$707,994,386					\$858,073,036	\$858,073,036	8
7 DWSD 12 MGD Max Day at P&B	\$742,168,081					\$892,246,731	\$892,246,731	9
8 KWA - 2	\$766,784,313	\$651,625,143	\$671,565,107	\$654,706,341			\$654,706,341	4
9 DWSD 18 MGD Max Day at P&B	\$791,202,885					\$812,337,848	\$812,337,848	7

Option for Water Supply	TYJT Projected 30 Year Total Cost	30 Year O&M Reduction for Treating Lake Huron Water	25 Year Bond Cost for Redundant Connections	Eliminate KWA Reserve	Use KWA 25 Year Capital Charge \$355,300 / MGD	25 Year Bond Cost for Flint WTP Upgrades	Adjusted 30 Year Total Cost	Rank (Least to Highest Cost)
1 Flint WTP Only	\$590,441,893		Included				\$590,441,893	3
2 DWSD 8 MGD Max Day at Inlay	\$621,211,298		Note 1			\$150,078,650	\$771,289,948	5
3 KWA 10/31/12 Update	\$649,775,166	-\$115,159,170	\$21,134,963				\$555,750,960	1
4 DWSD 8 MGD Max Day at P&B	\$657,167,877		Note 1			\$150,078,650	\$807,246,527	6
5 KWA-1	\$707,279,715	-\$115,159,170	\$21,134,963		-\$39,329,050		\$573,926,459	2
6 DWSD 12 MGD Max Day at Inlay	\$707,994,386		Note 1			\$150,078,650	\$858,073,036	8
7 DWSD 12 MGD Max Day at P&B	\$742,168,081		Note 1			\$150,078,650	\$892,246,731	9
8 KWA - 2	\$766,784,313	-\$115,159,170	\$21,134,963	-\$16,858,766			\$655,901,341	4
9 DWSD 18 MGD Max Day at P&B	\$791,202,885		\$21,134,963				\$812,337,848	7

### Representative Genesee County Water and Wastewater Projects

Project	Description	All Engineering Fees	Engineer's Estimate	Bid Price	Final Construction Cost	Engineering & Contingency %
Fox Pump Station	30 mgd wastewater pump station & forcemain	\$1,829,259		\$12,394,273	\$12,074,223	
		15.2%				
NEES Project	60" Relief Sewer - included tunneled sections		\$54,707,212	\$55,985,672	\$69,999,429	
					28.0%	
North Water Loop	23 miles 36" and 48" transmission main, pump station, & 20 MG Reservoir	\$4,102,610	\$29,200,000	\$23,570,110	\$25,798,529	2.4%
		15.9%			11.6%	
Henderson Road PS	32 MGD Water Pump Station & Two 10 MG Tanks		\$12,046,368	\$12,846,077	\$13,517,582	
					12.2%	
Pump Station #1	80 MGD wastewater pump station	\$1,735,063	\$10,269,000	\$8,225,400	\$8,292,277	2.4%
		20.9%			19.2%	

**Notes:**

Engineering Fees include all planning, soils investigation, design, construction inspection & testing, and construction management costs

Engineering Fees % is based on final construction cost

Engineering and Contingency % is based on engineering fees + amount final construction cost exceeds estimate

Final Construction Cost % is based on difference between final construction cost and engineer's estimate

NEES Project Contractor went out of business during project - increasing cost to finish project

Projects constructed within last ten years





STATE OF MICHIGAN  
EXECUTIVE OFFICE  
LANSING

RICK SNYDER  
GOVERNOR

BRIAN CALLEY  
LT. GOVERNOR

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Department of Health and Human Services

**FOR IMMEDIATE RELEASE**

Friday, Oct. 2, 2015

## **Gov. Rick Snyder: Comprehensive action plan will help Flint residents address water concerns**

*Collaborative effort with state, federal and city leaders focuses on testing, assistance*

FLINT, Mich. — Flint residents need to have access to safe, clean, water now and long into the future, Gov. Rick Snyder said, announcing a comprehensive action plan created with state, federal and city leaders to address concerns about drinking water.

The water leaving Flint's drinking water system is safe to drink, but some families with lead plumbing in their homes or service connections could experience higher levels of lead in the water that comes out of their faucets.

The action plan focuses on increasing water testing, offering additional precautions for families with lead plumbing in their homes, and providing long-term solutions to address the city's water infrastructure challenges. The plan was created at Snyder's direction by the Michigan Departments of Environmental Quality (DEQ) and Health and Human Services (DHHS), the U.S. Environmental Protection Agency, and the city of Flint.

"We are focused on helping ensure safe, clean, accessible drinking water and addressing and mitigating concerns and protecting public health," Snyder said. "Today's action plan builds upon ongoing work with local, state and federal agencies and our partnership with city and community leaders. Together, we are working to ensure that all Flint residents have accurate information and know that help is available to address potential problems."

The city and the state also are working together to gather more data to ensure the water that leaves the treatment plant as well as the water that arrives in Flint homes is safe for all residents. The plan includes:

- Testing in Flint public schools immediately to ensure that drinking water is safe, with testing also available at no cost to any other school in Flint.
- Offering free water testing to Flint residents to assure their drinking water is safe.

- Providing free water filters to residents.
- Expanding health exposure testing of individual homes.
- Accelerating corrosion controls in the Flint drinking water system.
- Accelerating water system improvements to address replacing lead service lines.
- Expediting the completion of the Karegnondi Water Authority pipeline.
- Expanding a Safe Drinking Water Technical Advisory Committee to ensure the best technology, practices and science are being followed by adding an expert from the Environmental Protection Agency's Office of Research and Development to the group.
- Naming Dr. Eden Wells, chief medical executive for the Michigan Department of Health and Human Services, as the Flint drinking water public health adviser.
- Boosting a comprehensive lead education program to make sure residents have detailed information about how to protect themselves and their homes.

Residents can have their water tested by calling 810-787-6537 and pressing 1, or emailing [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com). The DEQ is covering the cost of this testing.

State leaders have been working closely with state and federal lawmakers to tap resources at all levels of government to address concerns.

State health experts said there has been an increase in elevated childhood blood lead levels in some specific communities. Initial analysis of MDHHS data found that blood lead levels of children in Flint have followed an expected seasonal trend. While this analysis for Flint as a whole remains true, a comprehensive and detailed review breaking down data by ZIP codes with the city revealed that MDHHS data is consistent with a study presented recently by Hurley Children's Hospital.

"While we cannot conclusively say that the water source change is the sole cause of the increase, this analysis supports our efforts as we take active steps to reduce all potential lead exposures in Flint," MDHHS Director Nick Lyon said. "As part of this, we are working closely with our public and private partners to provide Flint residents on MDHHS assistance programs with free water filters and inform families about the steps they can take to reduce all lead exposures in their home."

As a part of the action plan, National Sanitation Foundation certified water filters will be made available to Flint residents through emergency state funds and coordinated efforts with local community agencies and donors. Information about how to obtain the filters will soon be available.

"This action plan offers concrete steps we will take in a local, state and federal partnership to ensure all Flint residents have safe water to drink," DEQ Director Dan Wyant said. "The DEQ will work closely with the city to gather further data to ensure the water that leaves Flint's system as well as the water that arrives in Flint homes is safe to drink."

Additional information is available at [www.michigan.gov/flintwater](http://www.michigan.gov/flintwater).

###

→ Director FUJ

**Thelen, Mary Beth (DEQ)**

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**From:** Dillon, Andy (Treasury)  
**Sent:** Thursday, March 28, 2013 1:36 PM  
**To:** Stibitz, Brom (Treasury); Wyant, Dan (DEQ); Saxton, Thomas (Treasury); Rustem, William (GOV); Muchmore, Dennis (GOV); Roberts, John (GOV)  
**Subject:** Fwd: DWSD & Flint  
**Attachments:** [Untitled].pdf

FYI

Sent from my iPad

Begin forwarded message:

**From:** "Fausone, Jim" <JFausone@fb-firm.com>  
**To:** "Dillon, Andy (Treasury)" <DillonA2@michigan.gov>  
**Subject:** DWSD & Flint

Andy - here is the information you requested. Let me know if you need more information. As we move into DWSD 2.0 without federal court supervision, I can hear the chanting "free at last...free at last". Seriously this should make it easier to work things out with Flint and DWSD 2.0 if they want to work it out or get told to do it. Jim

James G. Fausone

[cid:image002.jpg@01CE2BAB.E4A45520]

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**FAUSONE BOHN LLP**

March 28, 2013

Andy Dillon, State Treasurer  
Michigan Department of Treasury  
Lansing, Michigan 48922

Dear Treasurer Dillon,

We understand that you are tasked with evaluating the merit for the City of Flint to cede from participation in the DWSD water system. For the following reasons, we represent to you that Flint's continuance in the present system is not only what is best for the City of Flint and Genesee County, but for the entire DWSD customer base.

Background

Water is provided by DWSD to the City of Flint via a 72" water main that runs west from a booster pumping station at Imlay City. Water purchased by Flint is then sold to its customers in the City of Flint and to Genesee County. The City of Flint and Genesee County are evaluating the construction of a new raw water supply system as members of the Karegondi Water Authority (KWA). The decision point is whether the City of Flint is best served by KWA or DWSD. Genesee County is not bound by Flint's decision. For this discussion, however, the emphasis is on Flint which encompasses its customer Genesee County.

The items presented below are based on a brief staff analysis of water quality, system capacity, capital, and financial considerations of the loss of Flint as a DWSD customer.

Water Quality

If the 72" water main is idled, there will be water quality issues for remaining customers on that line.

- ✓ The 72" main to feed Lapeer, Mayfield and Imlay City will need to be modified based on their comparatively low consumption at 12% of the flow. That pipeline will be too large to support the reduced demand which presents water quality issues.
- ✓ System users along the water transmission line in Lapeer, Mayfield, and Imlay City may experience water quality problems due to reduced disinfection levels associated with stagnant water. Solutions include abandoning the 72" main and replacing it with a smaller diameter pipe or adding facilities to re-chlorinate and disinfect the water a second time. The latter option is problematic because re-chlorination results in higher levels of disinfection byproducts.
- ✓ The Lake Huron Plant ("Plant") will require modifications to address water quality issues for Lapeer, Mayfield, and Imlay City. That cost is unknown.
- ✓ The Imlay Booster Station ("Station") will also need modification to feed Lapeer, Mayfield, and Imlay City. An estimated cost is \$1 million.

- ✓ The true water quality impact would need to be confirmed through a study or the master planning effort. These concerns and alternatives are based on a brief analysis.

#### Excess Capacity of a Public Utility

- ✓ If DWSD is not supplying Flint with water, then there will be three high capacity pumps at the Station which will be significantly underutilized.
- ✓ DWSD currently has treatment capacity of 1.7 BGD, which is easily expandable to close to 2.0 BGD with infrastructure already in place at the Plant. Meanwhile current max day use of the DWSD System is only about 1 BGD.
- ✓ Although more than one DWSD facility is able to provide water to Flint, the reduction in use as represented at the nearest water treatment plant would result in excess capacity of up to 70% at the Plant.
- ✓ The water line servicing Flint is approximately 25 miles long (extending from Inlay City to Flint). That line would have no use if Flint joins KWA.

#### Impairment of Ratepayer Funded Assets

- ✓ Twenty-five miles of water line would likely be abandoned.
- ✓ Three pumps at the Station would also be idled.
- ✓ The net book value of the water line is at least \$5M.
- ✓ In addition, improvements were completed at the Station in 2012 which serves Flint and other customers. The construction cost was \$44 million.
- ✓ DWSD has in good faith preserved the terms and conditions of the 1965 service agreement with Flint which expired in 2000. Beginning in the 2000s DWSD and its wholesale water customers collaborated on a new model contract. Since that time, DWSD and 73 of its wholesale water customers have entered into new model contracts. The model contract provides for DWSD to recoup the costs of customer specific constructed facilities in the event that the contract is terminated.

#### Financial Implications to Other DWSD Ratepayers

*The estimated immediate impact of the loss of Flint is an increase in rates to address a net revenue shortfall of approximately \$22 million, or 6 percent of total DWSD water revenue.* The long-term impact would require further analysis to evaluate the capital investment and increases in cost to address the operational concerns noted earlier. The immediate impact estimate is based on the FY 2013-14 DWSD financial plan as explained below.

- ✓ Flint volume (including Genesee County) represents approximately 7.4% of the suburban wholesale water sales, and 5.9% of the total water sales (including Detroit retail accounts) based on approximately 1.2 million Mcf of water sales.
- ✓ The allocated revenue requirement totals \$24.23 million, which is approximately 8.3% of the suburban wholesale revenue requirement, and 6.6% of the total revenue requirement (including Detroit retail).

- ✓ At most, variable cost savings of not providing service to Flint is 7 to 10 percent, or roughly \$2 million.
- ✓ The City of Flint's and Genesee County's revenue split is approximately equal. Loss of Genesee customers to KWA while maintaining the City of Flint as a customer would reduce the rate and dollar amounts above by half.
- ✓ DWSD ratepayers will incur the cost of operational changes at the Plant and the Station to address the water quality issues noted above, although charges to Flint during the KWA construction period would be evaluated.
- ✓ These amounts exclude the new capital investment for transmission piping for customers in the areas served by the Station and potentially at the Plant. Additional costs would be incurred to resize the water main to assure compliance with water quality standards.

#### Financial Risk

The ability to manage the financial risk for the City of Flint is especially precarious given its financial condition. As recently as yesterday, the frailty of the City's fiscal capacity is described by the present emergency financial manager in the Bloomberg News. The bottom line is that KWA's optimistic project with a cost of \$272M (\$82M attributable to Flint KWA's proposal) poses an undue financial risk to the public given that a system with reliable, excess capacity is readily available through DWSD. That risk is even greater based on the Tucker, Young, Jackson, Tull report that the KWA costs are underestimated by \$100 million.

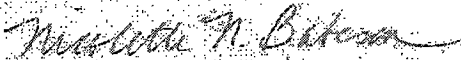
DWSD is undergoing monumental efforts to confront long-term operational and capital costs. The recent water rate adjustment was the lowest in decades, staff at all levels is actively involved in an organizational optimization process facilitated by EMA, there is an increased emphasis in long-term financial planning, and the transparency of these efforts is evident through more than a dozen customer-centric committees. Proactively addressing our borrowing costs and financial outlook is paramount to our mission. We understand the challenges that confront a public utility.

The bottom line is that Flint's financial flexibility will be impaired for generations by abandoning the DWSD system to participate in KWA. Duplicating the available capacity will expose them to a very large fixed cost obligation. As water utilities continue to experience reduced demand, the fixed costs component for capital, operating, and debt decrease the cost sharing base. For this reason, DWSD provides its customers the ability to adjust demand to control their costs.

### Going Forward

DWSD is committed to the viability of Flint's water needs. Going forward there may be ways that DWSD can provide technical assistance and collaboration to the City of Flint. This includes methodologies to address its high water loss ratio, shut-off program, and capital planning needs. DWSD has fostered a strong customer community through its outreach program. We encourage Flint to become engaged with these resources. Finally, DWSD has demonstrated an earnest interest by offering service options specifically tailored for Flint's needs through a flexible contract approach. We look forward to reaching a long-term, viable solution to provide Flint a safe, reliable, cost-effective water system.

Sincerely,



Nicolette N. Bateson, CPA

Chief Financial Officer

Detroit Water & Sewerage Department



March 28, 2013

Andy Dillon, State Treasurer  
Michigan Department of Treasury  
Lansing, Michigan 48922

Dear Treasurer Dillon,

We understand that you are tasked with evaluating the merit for the City of Flint to cede from participation in the DWSD water system. For the following reasons, we represent to you that Flint's continuance in the present system is not only what is best for the City of Flint and Genesee County, but for the entire DWSD customer base.

**Background**


Water is provided by DWSD to the City of Flint via a 72" water main that runs west from a booster pumping station at Imlay City. Water purchased by Flint is then sold to its customers in the City of Flint and to Genesee County. The City of Flint and Genesee County are evaluating the construction of a new raw water supply system as members of the Karegondi Water Authority (KWA). The decision point is whether the City of Flint is best served by KWA or DWSD. Genesee County is not bound by Flint's decision. For this discussion, however, the emphasis is on Flint which encompasses its customer Genesee County.

The items presented below are based on a brief staff analysis of water quality, system capacity, capital, and financial considerations of the loss of Flint as a DWSD customer.

**Water Quality**

If the 72" water main is idled, there will be water quality issues for remaining customers on that line.

- ✓ The 72" main to feed Lapeer, Mayfield and Imlay City will need to be modified based on their comparatively low consumption at 12% of the flow. That pipeline will be too large to support the reduced demand which presents water quality issues.
- ✓ System users along the water transmission line in Lapeer, Mayfield, and Imlay City may experience water quality problems due to reduced disinfection levels associated with stagnant water. Solutions include abandoning the 72" main and replacing it with a smaller diameter pipe or adding facilities to re-chlorinate and disinfect the water a second time. The latter option is problematic because re-chlorination results in higher levels of disinfection byproducts.
- ✓ The Lake Huron Plant ("Plant") will require modifications to address water quality issues for Lapeer, Mayfield, and Imlay City. That cost is unknown.
- ✓ The Imlay Booster Station ("Station") will also need modification to feed Lapeer, Mayfield, and Imlay City. An estimated cost is \$1 million.

- 
- ✓ The true water quality impact would need to be confirmed through a study or the master planning effort. These concerns and alternatives are based on a brief analysis.

#### Excess Capacity of a Public Utility

- ✓ If DWSD is not supplying Flint with water, then there will be three high capacity pumps at the Station which will be significantly underutilized.
- ✓ DWSD currently has treatment capacity of 1.7 BGD, which is easily expandable to close to 2.0 BGD with infrastructure already in place at the Plant. Meanwhile current max day use of the DWSD System is only about 1 BGD.
- ✓ Although more than one DWSD facility is able to provide water to Flint, the reduction in use as represented at the nearest water treatment plant would result in excess capacity of up to 70% at the Plant.
- ✓ The water line servicing Flint is approximately 25 miles long (extending from Imlay City to Flint). That line would have no use if Flint joins KWA.

#### Impairment of Ratepayer Funded Assets

- ✓ Twenty-five miles of water line would likely be abandoned.
- ✓ Three pumps at the Station would also be idled.
- ✓ The net book value of the water line is at least \$5M.
- ✓ In addition, improvements were completed at the Station in 2012 which serves Flint and other customers. The construction cost was \$44 million.
- ✓ DWSD has in good faith preserved the terms and conditions of the 1965 service agreement with Flint which expired in 2000. Beginning in the 2000s DWSD and its wholesale water customers collaborated on a new model contract. Since that time, DWSD and 73 of its wholesale water customers have entered into new model contracts. The model contract provides for DWSD to recoup the costs of customer specific constructed facilities in the event that the contract is terminated.

#### Financial Implications to Other DWSD Ratepayers

*The estimated immediate impact of the loss of Flint is an increase in rates to address a net revenue shortfall of approximately \$22 million, or 6 percent of total DWSD water revenue. The long-term impact would require further analysis to evaluate the capital investment and increases in cost to address the operational concerns noted earlier. The immediate impact estimate is based on the FY 2013-14 DWSD financial plan as explained below.*

- ✓ Flint volume (including Genesee County) represents approximately 7.4% of the suburban wholesale water sales, and 5.9% of the total water sales (including Detroit retail accounts) based on approximately 1.2 million Mcf of water sales.
- ✓ The allocated revenue requirement totals \$24.23 million, which is approximately 8.3% of the suburban wholesale revenue requirement, and 6.6% of the total revenue requirement (including Detroit retail).

- ✓ At most, variable cost savings of not providing service to Flint is 7 to 10 percent, or roughly \$2 million.
- ✓ The City of Flint's and Genesee County's revenue split is approximately equal. Loss of Genesee customers to KWA while maintaining the City of Flint as a customer would reduce the rate and dollar amounts above by half.
- ✓ DWSD ratepayers will incur the cost of operational changes at the Plant and the Station to address the water quality issues noted above, although charges to Flint during the KWA construction period would be evaluated.
- ✓ These amounts exclude the new capital investment for transmission piping for customers in the areas served by the Station and potentially at the Plant. Additional costs would be incurred to resize the water main to assure compliance with water quality standards.

#### Financial Risk

The ability to manage the financial risk for the City of Flint is especially precarious given its financial condition. As recently as yesterday, the frailty of the City's fiscal capacity is described by the present emergency financial manager in the Bloomberg News. The bottom line is that KWA's optimistic project with a cost of \$272M (\$82M attributable to Flint KWA's proposal) poses an undue financial risk to the public given that a system with reliable, excess capacity is readily available through DWSD. That risk is even greater based on the Tucker, Young, Jackson, Tull report that the KWA costs are underestimated by \$100 million. ✓

DWSD is undergoing monumental efforts to confront long-term operational and capital costs. The recent water rate adjustment was the lowest in decades; staff at all levels is actively involved in an organizational optimization process facilitated by EMA; there is an increased emphasis in long-term financial planning, and the transparency of these efforts is evident through more than a dozen customer-centric committees. Proactively addressing our borrowing costs and financial outlook is paramount to our mission. We understand the challenges that confront a public utility.

The bottom line is that Flint's financial flexibility will be impaired for generations by abandoning the DWSD system to participate in KWA. Duplicating the available capacity will expose them to a very large fixed cost obligation. As water utilities continue to experience reduced demand, the fixed costs component for capital, operating, and debt decrease the cost sharing base. For this reason, DWSD provides its customers the ability to adjust demand to control their costs.

### Going Forward

DWSD is committed to the viability of Flint's water needs. Going forward there may be ways that DWSD can provide technical assistance and collaboration to the City of Flint. This includes methodologies to address its high water loss ratio, shut-off program, and capital planning needs. DWSD has fostered a strong customer community through its outreach program. We encourage Flint to become engaged with these resources. Finally, DWSD has demonstrated an earnest interest by offering service options specifically tailored for Flint's needs through a flexible contract approach. We look forward to reaching a long-term, viable solution to provide Flint a safe, reliable, cost-effective water system.

Sincerely,



Nicolette N. Bateson, CPA

Chief Financial Officer

Detroit Water & Sewerage Department

**Thelen, Mary Beth (DEQ)**

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**From:** Creal, William (DEQ)  
**Sent:** Sunday, April 14, 2013 9:35 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Anderson, Madhu (DEQ); Wurfel, Brad (DEQ)  
**Subject:** Re: KWA

Sue McCormick discussed this with me Friday before our wastewater meeting. She is not happy but intends to make an offer that should keep Flint and Genesee county in the Dwsd system but she recognizes that politics will probably not make this happen.

On Apr 14, 2013, at 7:22 AM, "Wyant, Dan (DEQ)" <[WyantD@michigan.gov](mailto:WyantD@michigan.gov)> wrote:

Dan Wyant

On Apr 13, 2013, at 4:46 PM, "Anderson, Madhu (DEQ)" <[AndersonM30@michigan.gov](mailto:AndersonM30@michigan.gov)> wrote:

Dan /Bill -- I am a bit confused by what they are referring to as "state approval" in the article? Are they referring to DEQ's approval of the the KWA project or some other approval as part of the project? What recourse if any do Oakland, etc have as ratepayers against Flint/Genesee County?  
<image002.png>

Madhu R. Anderson  
Director, Office of Policy  
Department of Environmental Quality  
Phone: 517-241-7396  
[AndersonM30@michigan.gov](mailto:AndersonM30@michigan.gov)



On 13 April 13, at 3:54 PM, "Wyant, Dan (DEQ)" <[WyantD@michigan.gov](mailto:WyantD@michigan.gov)> wrote:

Look at the article in today's Detroit News on DWSD.

Dan Wyant

Begin forwarded message:

**From:** "Dillon, Andy (Treasury)" <[DillonA2@michigan.gov](mailto:DillonA2@michigan.gov)>  
**Date:** April 13, 2013 3:45:20 PM EDT  
**To:** "Muchmore, Dennis (GOV)" <[muchmored@michigan.gov](mailto:muchmored@michigan.gov)>,  
"Wyant, Dan (DEQ)" <[WyantD@michigan.gov](mailto:WyantD@michigan.gov)>  
**Cc:** "Stibitz, Brom (Treasury)" <[StibitzB@michigan.gov](mailto:StibitzB@michigan.gov)>

"Roberts, John (GOV)" <[robertsj9@michigan.gov](mailto:robertsj9@michigan.gov)>

**Subject: KWA**

The DetNews article suggests we may have a lot on our plate on this issue Monday and Tuesday. Dan, I suspect we may need your help to review and evaluate the "last best offer".

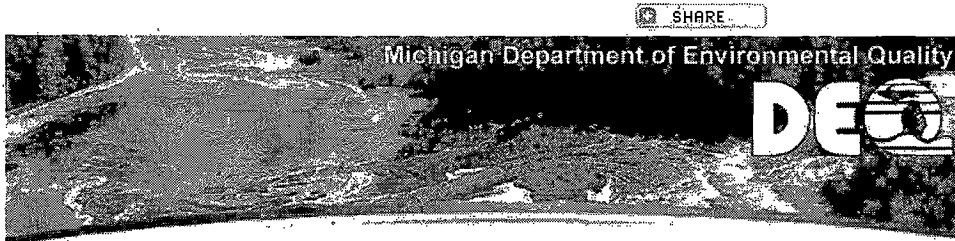
Sent from my iPad

**Thelen, Mary Beth (DEQ)**

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**From:** Michigan Department of Environmental Quality  
<MIDEQ@govsubscriptions.michigan.gov>  
**Sent:** Thursday, October 01, 2015 5:22 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** [DEQ] Michigan leaders to announce action plan for Flint drinking water

Having trouble viewing this email? [View it as a Web page.](#)



Oct. 1, 2015

## Michigan leaders to announce action plan for Flint drinking water

**Friday, Oct. 2 at 1:30 p.m.**

Local, state and federal leaders will host a press conference to announce a comprehensive action plan for addressing drinking water concerns in Flint. Participants will include:

- Harvey Hollins, Director of the Office of Urban Initiatives for Gov. Rick Snyder
- Dan Wyant, Director for the Michigan Department of Environmental Quality
- Nick Lyon, Director for the Michigan Department of Health and Human Services
- Dr. Eden Wells, Chief Medical Executive for the Michigan Department of Health and Human Services
- Dayne Walling, Mayor of Flint
- Other local, state and federal officials

Location:

Kettering University, Innovation Center  
1300 Bluff St.  
Flint, MI 48504

**This is a media event open to credentialed news media only. Media who plan to attend this event should RSVP by noon Friday.** Contact Rosemarie Olszewski at 517-284-6700 or [olszewskir@michigan.gov](mailto:olszewskir@michigan.gov).



Questions?  
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Ph: 800-662-9278

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This email was sent to thelenm2@michigan.gov using GovDelivery, on behalf of: Michigan Department of Environmental Quality · Constitution Hall · 525 West Allegan Street · PO Box 30473 · Lansing, MI 48909 · 800-662-9278



## Thelen, Mary Beth (DEQ)

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 27, 2013 1:39 PM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Willard, Veronica (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Creal, William (DEQ)  
**Subject:** ODWMA Response - Flint KWA-DWSD Report  
**Attachments:** deq-wb-dwehs-wwciu-godclqwwpermitresponsepubliccomment\_290345\_7.pdf; Rowe Review of Tucker Young Report.pdf  
**Importance:** High

Director Wyant, and Deputy Director Sygo,

Addendums to ODWMA comments provided yesterday regarding the City of Flint water system and comments on the reports from Tucker, Young, Jackson, Tull, Inc. (TYJT) can be found below in red. Additional comments are as follows:

With regards to regulatory authority for DEQ to allow or prevent the breakup of water utilities, and State vs. local decisions about cost effectiveness, it is important to note that when the DEQ permitted the water withdrawal for KWA (permit 2009-001) part of the decision making process (copy attached) included reasonable use and the balance of Economic Development, Social Development, and Environmental Protection. As part of the public participation process general comments were received (pages 6 & 7) regarding impacts on DWSD and rates to remaining customers. The Department's response to those comments stated:

"The DEQ is specifically precluded from using part 327 to "...diminish or create any existing authority of municipalities to require persons to connect to municipal water supply systems as authorized by law" (MCL 324.32726)."

And

"It is appropriately an issue for water service contract negotiations between the regional water system and its customers. To do otherwise invites unwanted intervention of the state into local decision making."

ODWMA cannot on its own assess an actual dollar value to any regional benefit for the City of Flint to remain a full customer of DWSD, but the following should be included in any additional analysis:

- The cost estimates provided in the TYJT report show a cost difference between full KWA and full DWSD participation of \$172 million over 30 years.
- The formation of KWA would itself be considered one of the largest regional drinking water authorities in the State in terms of capacity, and as such any regional benefits provided by DWSD may only be marginal in comparison.

Finally, we have additional questions for TYJT regarding the various DWSD supply options and the considerations they made in the operations of the Flint WTP. These considerations will have an impact on the cost estimates for DWSD options.

We look forward to further discussion of these comments during our meetings tomorrow, and please let us know if you have any additional questions for us between now and then.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 26, 2013 3:58 PM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ)  
**Cc:** Willard, Veronica (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Flint Draft Response

I will provide additional follow up by tomorrow (Wed.) afternoon to my previous email below based on our discussion and the conference call with Andy Dillon earlier today.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 26, 2013 12:37 PM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ)  
**Cc:** Willard, Veronica (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Flint Draft Response

Director Wyant,

In preparation for our call today with Treasurer Dillon's office, ODWMA has developed the following for consideration. We can provide any additional info you require during the meeting.

ODWMA has reviewed the materials developed by the consultant Tucker, Young, Jackson, Tull, Inc. (TYJT) for Treasury regarding the City of Flint and potential alternatives for public water supply. Based on our reviews, we have developed the following comments to this point in our analysis:

1. The TYJT report does not contain the full scope of the Karegnondi Water Authority (KWA) raw water supply system. TYJT concerns over raw water supply redundancy and reliability are addressed to the satisfaction of ODWMA under the full KWA proposal. Please note some portions of the overall project are being financed independently by the Genesee County Drain Commission.
2. There are significant differences in contract language between KWA and Detroit Water and Sewerage Department (DWSD) with respect to the contracted maximum day demand capacity.
  - a. Under a KWA contract, a "maximum day" capacity of 18 million gallons per day (MGD) would fully satisfy current demands of the City of Flint, without the need to supplement raw water capacity using the Flint River. (18 MGD, average over a 30 day period).
  - b. Under a DWSD model contract, a "maximum day" capacity, even at 18 MGD, would not satisfy the current demands for the City of Flint. (18 MGD, over any 24 hour period).
3. Restrictions in contracted capacity that would prevent the City of Flint from meeting peak demand requirements present potential limits to economic development within the City of Flint, including possible connection bans and water system extension bans. This information was previously conveyed to the City of Flint by ODWMA staff.
4. All contract options with DWSD that are considered semi-competitive with the KWA contract do not fully supply the City of Flint, and would require the City of Flint to meet a significant, if not majority, of its water demands by treating water from the Flint River. Continuous use of the Flint River at such demand rates would:
  - a. Pose an increased microbial risk to public health (Flint River vs. Lake Huron source water)

- b. Pose an increased risk of disinfection by-product (carcinogen) exposure to public health (Flint River vs. Lake Huron source water)
  - c. Trigger additional regulatory requirements under the Michigan Safe Drinking Water Act (LT2ESWTR)
  - d. Require significant enhancements to treatment at the Flint WTP, beyond those identified in the TYJT report (see item 5 below).
  - e. Water Resource Division is evaluating potential impacts to NPDES wastewater discharge permits in downstream segments of the Flint River, as a result of decreased river baseflow caused by Flint WTP use.
5. The TYJT report does not adequately address increased requirements and costs associated with using the Flint River as a significant source for the Flint WTP, which are not necessary under a Lake Huron source water scenario. This includes:
    - a. The need to provide softening treatment
    - b. Limitations on disposal options for lime softening sludge
    - c. Increased ozone capacity, UV disinfection
    - d. Additional backup power, more power required for Flint River operation
  6. The Flint WTP must operate at some minimum level and within a range of flow rates to maintain treatment effectiveness. Currently that minimum level is 9 MGD. This level may be reduced with additional capital costs to modify the WTP, not addressed in the TYJT report.
  7. Allowing Flint WTP to blend water with DWSD sets a new precedent that could pose future consequences with other DWSD customers.
  8. Costs impacts to remaining DWSD customers would be similar under the proposed scenarios, only retaining 8 MGD of 30+ MGD total Flint/Genesee Co. demands, based on the following:
    - a. Genesee County distribution system demands are pulling out of DWSD regardless of the decisions by Flint WTP
    - b. Flint's need to utilize the Flint River as a source
  9. ODWMA anticipates cost savings under the KWA proposal will be leveraged to provide additional improvements to the City of Flint water distribution system, improving efficiency and providing additional cost benefits. The KWA water withdrawal permit (2009-001) includes the required implementation of conservation measures that would also drive these distribution system improvements.
  10. Major cost discrepancies in TYJT analysis
    - a. Engineering, Legal, Administration, Contingency – TYJT appears to have effectively double charged for these costs in their KWA estimates without adequate justification
    - b. Pumping facilities – TYJT cost estimate methodology does not appear to address localized market costs and does not distinguish fixed and variable costs in its comparison analysis.
  11. Remaining DWSD customers in Lapeer County could potentially see water quality impacts as a result of Flint joining KWA, if they remain with DWSD. However, indications to ODWMA are that these communities are currently in final negotiations with KWA for service, which would make this a non-issue.
    - a. City Lapeer
    - b. City of Imlay City

Additional response to the TYJT report has also been provided by Rowe Engineering to Flint EFM, Mr. Ed Kurtz. (Copy Attached)

ODWMA has continued to meet on a regular basis with KWA, Genesee County, and the City of Flint regarding these water supply proposals.

ODWMA will continue to provide any additional detailed analysis requested by Treasury or the DEQ Executive Office.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

## Letter Buckslip

02-Nov-15

<b>ID:</b>	<b>DIR00177</b>	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office _____ Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ E-Logged _____
<b>Date of letter:</b>	10/1/2015	
<b>Date received:</b>	10/2/2015	
<b>Date due:</b>	10/19/2015	
<b>Reply date:</b>	10/23/2015	
<b>Last name:</b>	Tallman	
<b>First name:</b>	Sarah C.	
<b>Organization:</b>	Natural Resources Defense Council	
<b>Subject:</b>	Petition for Emergency Action under the Safe Drinking Water Act to Abate the Imminent and Substantial Endangerment to Flint, Michigan Residents	
<b>Reply to:</b>		
<b>Author:</b>	DAG is handling this matter	
<b>Owner:</b>	OLSZEWSKIR	

<u>Action</u>	<u>Action Date</u>	<u>Due Date</u>	<u>Entity</u>	<u>Signature</u>	<u>Owner</u>	<u>CCs</u>
Assigned 1	10/12/2015	10/19/2015	EXE	HAA	OLSZEWSKIR	Thelen Sygo Shekter Smith Devereaux Manning/Hart File 2-2 EPA

**Comments:** Original to EXE (Jim Sygo)

Jim Sygo to discuss with AG's office and ODWMA. Disc w/exhibits went to Sygo. Mbt

Assigned 2	10/14/2015	10/19/2015	EXE	HAA	SHALERK	File 2-1 DAG
------------	------------	------------	-----	-----	---------	--------------

**Comments:** ENRA Assistant Attorneys General are handling this matter. DEQ client contacts are: Jim Sygo, George Krisztian, Liane Shekter Smith, and Steve Busch.

File Executive	10/23/2015	EXE	SHALERK
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**Comments:** File 2-2 EPA

## **Shaler, Karen (DEQ)**

---

**From:** Shaler, Karen (DEQ)  
**Sent:** Wednesday, October 14, 2015 5:46 PM  
**To:** Novak, Robin (AG); Synk, Polly (AG)  
**Cc:** Manning, Peter (AG); Reichel, Robert (AG); Kuhl, Richard (AG); Bettenhausen, Margaret (AG); Hart, Nancy (AG); Wilcox, Kimberly (AG); Sygo, Jim (DEQ); Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: Flint - Safe Drinking Water Action  
**Attachments:** DIR00177 Tallman / Petition for Emergency Action under the Safe Drinking Water Act to Abate the Imminent and Substantial Endangerment to Flint, Michigan Residents

It turns out that the exhibits CD sent to us by the Natural Resources Defense Council with their October 1 letter (see attached DIR00177) is not readable, as both Eric Shaw and I tried to access the CD several times on two different computers.

Polly: As you mentioned while over here for this afternoon's meeting, it looks like your office will need to contact your EPA counterparts to see if they would provide you with the exhibits.

In addition, Jim Sygo asks that the following four DEQ staff be listed as client contacts for this matter:

Jim Sygo, Chief Deputy Director  
George Krisztian, Flint Action Plan Coordinator and Laboratory Director  
Liane Shekter Smith, Chief, Office of Drinking Water and Municipal Assistance (ODWMA)  
Steve Busch, District Supervisor, Lansing District Office, ODWMA

Thanks.

Karen Shaler, Management Assistant to  
Chief Deputy Director Jim Sygo  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6709  
Fax: 517-241-7401  
[shalerk@michigan.gov](mailto:shalerk@michigan.gov)

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, October 14, 2015 1:49 PM  
**To:** Shaler, Karen (DEQ); Sygo, Jim (DEQ); Krisztian, George (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: Flint - Safe Drinking Water Action

Who else from DEQ should be on these e-mails?

Also, this is the first e-mail that I've seen about this action. Do any of you know what exhibits are being requested?

Liane J. Shekter Smith, P.E., Chief

Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

---

**From:** Novak, Robin (AG)  
**Sent:** Wednesday, October 14, 2015 1:17 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Manning, Peter (AG); Reichel, Robert (AG); Synk, Polly (AG); Kuhl, Richard (AG); Bettenhausen, Margaret (AG); Hart, Nancy (AG); Wilcox, Kimberly (AG)  
**Subject:** Flint - Safe Drinking Water Action

This matter has been assigned to AAGs Richard Kuhl (File Manager 1) and Margaret Bettenhausen (File Manager 2), our file no. 2015-0122524-A. Please direct all future communication to their attention.

If there is anyone else from DEQ that you would like us to add as a client contact, please let us know and we will be happy to note our file.

**\*\*Also, please send a copy of the CD containing the exhibits at your earliest convenience.**

Let us know if you have any questions.

Have a great day!

Robin

*Robin L. Novak  
Legal Secretary  
Michigan Department of Attorney General  
Environment, Natural Resources, and Agriculture Division  
PO Box 30755  
Lansing, Michigan 48909  
Phone: (517) 373-7540  
Fax: (517) 373-1610*

Detroit Mtg

**Thelen, Mary Beth (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, April 17, 2013 9:51 AM  
**To:** Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ)  
**Cc:** Shaler, Karen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: KWA and City of Flint

Director Wyant, Deputy Director Sygo, and Liane,

A response at this point may be moot as Flint and Genesee Co. already held a press conference yesterday rejecting the DWSD offer.

It is also unclear whether DWSD provided its offer directly to Flint and Genesee Co. by the deadline in Treasurer Dillon's letter. However, Flint and Genesee Co. still took the offer under consideration.

Our office concurs with both Flint and Genesee Co. that the offers provided by DWSD were incomplete.

Of the two scenarios provided by DWSD it appeared that only Scenario 2 was listed as potentially being more cost effective. However, this scenario did not address the following:

1. The DWSD scenarios are based on 40 MGD of service capacity. However, the KWA project is providing 60 MGD of initial capacity with potential expansion to 75 MGD in the future. Therefore, in order for a more direct comparison the DWSD scenario would need to increase capacity to 60 MGD, which would increase fixed rate commodity costs as well as the capital costs for the Huron Plant that DWSD was planning to allocate to Flint and Genesee Co., presumably by as much as 50%.
2. DWSD proposals cover a 30 year period to 2042, but fail to recognize that after this period bond payments for the KWA project will be complete and result in a significant reduction in costs for the KWA option.
3. While DWSD indicates that Flint and Genesee Co. would be given "broadened representation", it remains unclear exactly what this means in terms of actual control in the decision making process.
4. This scenario continues to rely on a single transmission system and would require the City of Flint to maintain its WTP for emergency purposes and these costs do not appear to be included. In addition, use of the Flint WTP as an emergency backup would leave Genesee Co. without an adequate backup supply to meet their 30 year needs.

Again, without DWSD providing the specific details of these proposals, it is difficult to provide a true comparative analysis, and as such Flint and Genesee Co. appear to be justified in their rejection of these proposals.

Please let me know if you require any further response.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Tuesday, April 16, 2013 9:59 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)



**Cc:** Shekter Smith, Liane (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)

**Subject:** FW: KWA and City of Flint

Steve, Mike and Richard,

Please take a look at DWSD's last best offer to the City of Flint and provide your collective perspective to the Director through Liane by the end of the week. Copy me in as well. I'll be out of the office but would like to know if you think this is worth considering.

Thank you for your expedited review.

---

**From:** Wyant, Dan (DEQ)

**Sent:** Tuesday, April 16, 2013 6:52 AM

**To:** Sygo, Jim (DEQ)

**Subject:** FW: KWA and City of Flint

Jim,

Liane is out of the office today, Can you forward this directly to her staff that worked on this with us.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

---

**From:** Wyant, Dan (DEQ)

**Sent:** Tuesday, April 16, 2013 6:51 AM

**To:** Sygo, Jim (DEQ); Creal, William (DEQ); Shekter Smith, Liane (DEQ)

**Cc:** Anderson, Madhu (DEQ)

**Subject:** FW: KWA and City of Flint

Bill and Liane,

Can you have your staff's take a quick look at this and let me know today if they think this changes their thoughts and comments to me last week.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

---

**From:** Dillon, Andy (Treasury)

**Sent:** Monday, April 15, 2013 7:55 PM

**To:** Wyant, Dan (DEQ); Dennis Muchmore; Roberts, John (GOV)

**Cc:** Stibitz, Brom (Treasury); Saxton, Thomas (Treasury)

**Subject:** Fwd: KWA and City of Flint

FYI

Dan, any thoughts re the attached?

We gave dwsd until today to put best offer on table. Flint is to get back to us tmrw. I want to make sure their expected rejection is made in good faith.

Sent from my iPad

Begin forwarded message

**From:** "Debra Ragland" <[dragland@dwsd.org](mailto:dragland@dwsd.org)>  
**To:** "[ekurtz@cityofflint.com](mailto:ekurtz@cityofflint.com)" <[ekurtz@cityofflint.com](mailto:ekurtz@cityofflint.com)>  
**Cc:** "[jwright@co.genesees.mi.us](mailto:jwright@co.genesees.mi.us)" <[jwright@co.genesees.mi.us](mailto:jwright@co.genesees.mi.us)>, "Dillon, Andy (Treasury)" <[DillonA2@michigan.gov](mailto:DillonA2@michigan.gov)>, "James Fausone" <[fausone@dwsd.org](mailto:fausone@dwsd.org)>, "[orrk@detroitmi.gov](mailto:orrk@detroitmi.gov)" <[orrk@detroitmi.gov](mailto:orrk@detroitmi.gov)>, "Sue McCormick" <[mccormick@dwsd.org](mailto:mccormick@dwsd.org)>  
**Subject:** KWA and City of Flint

Please see attached on behalf of Sue F. McCormick.

Faxed copy forwarded to Mayor Dayne Walling and Jeff Wright.

## **Olszewski, Rosemarie (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 27, 2013 1:39 PM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Seymour, Veronica (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Creal, William (DEQ)  
**Subject:** ODWMA Response - Flint KWA-DWSD Report  
**Attachments:** deq-wb-dwehs-wwciu-gcdclqwwpermitresponsepubliccomment\_290345\_7.pdf; Rowe Review of Tucker Young Report.pdf  
  
**Importance:** High

Director Wyant, and Deputy Director Sygo,

Addendums to ODWMA comments provided yesterday regarding the City of Flint water system and comments on the reports from Tucker, Young, Jackson, Tull, Inc. (TYJT) can be found below in red. Additional comments are as follows:

With regards to regulatory authority for DEQ to allow or prevent the breakup of water utilities, and State vs. local decisions about cost effectiveness, it is important to note that when the DEQ permitted the water withdrawal for KWA (permit 2009-001) part of the decision making process (copy attached) included reasonable use and the balance of Economic Development, Social Development, and Environmental Protection. As part of the public participation process general comments were received (pages 6 & 7) regarding impacts on DWSD and rates to remaining customers. The Department's response to those comments stated:

"The DEQ is specifically precluded from using part 327 to "...diminish or create any existing authority of municipalities to require persons to connect to municipal water supply systems as authorized by law" (MCL 324.32726)."

And

"It is appropriately an issue for water service contract negotiations between the regional water system and its customers. To do otherwise invites unwanted intervention of the state into local decision making."

ODWMA cannot on its own assess an actual dollar value to any regional benefit for the City of Flint to remain a full customer of DWSD, but the following should be included in any additional analysis:

- The cost estimates provided in the TYJT report show a cost difference between full KWA and full DWSD participation of \$172 million over 30 years.
- The formation of KWA would itself be considered one of the largest regional drinking water authorities in the State in terms of capacity, and as such any regional benefits provided by DWSD may only be marginal in comparison.

Finally, we have additional questions for TYJT regarding the various DWSD supply options and the considerations they made in the operations of the Flint WTP. These considerations will have an impact on the cost estimates for DWSD options.

We look forward to further discussion of these comments during our meetings tomorrow, and please let us know if you have any additional questions for us between now and then.

Stephen Busch, P.E.

Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 26, 2013 3:58 PM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ)  
**Cc:** Willard, Veronica (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Flint Draft Response

I will provide additional follow up by tomorrow (Wed.) afternoon to my previous email below based on our discussion and the conference call with Andy Dillon earlier today.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 26, 2013 12:37 PM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ)  
**Cc:** Willard, Veronica (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Flint Draft Response

Director Wyant,

In preparation for our call today with Treasurer Dillon's office, ODWMA has developed the following for consideration. We can provide any additional info you require during the meeting.

ODWMA has reviewed the materials developed by the consultant Tucker, Young, Jackson, Tull, Inc. (TYJT) for Treasury regarding the City of Flint and potential alternatives for public water supply. Based on our reviews, we have developed the following comments to this point in our analysis:

1. The TYJT report does not contain the full scope of the Karegnondi Water Authority (KWA) raw water supply system. TYJT concerns over raw water supply redundancy and reliability are addressed to the satisfaction of ODWMA under the full KWA proposal. Please note some portions of the overall project are being financed independently by the Genesee County Drain Commission.
2. There are significant differences in contract language between KWA and Detroit Water and Sewerage Department (DWSD) with respect to the contracted maximum day demand capacity.
  - a. Under a KWA contract, a "maximum day" capacity of 18 million gallons per day (MGD) would fully satisfy current demands of the City of Flint, without the need to supplement raw water capacity using the Flint River. (18 MGD, average over a 30 day period).
  - b. Under a DWSD model contract, a "maximum day" capacity, even at 18 MGD, would not satisfy the current demands for the City of Flint. (18 MGD, over any 24 hour period).
3. Restrictions in contracted capacity that would prevent the City of Flint from meeting peak demand requirements present potential limits to economic development within the City of Flint, including possible connection bans and water system extension bans. This information was previously conveyed to the City of Flint by ODWMA staff.

4. All contract options with DWSD that are considered semi-competitive with the KWA contract do not fully supply the City of Flint, and would require the City of Flint to meet a significant, if not majority, of its water demands by treating water from the Flint River. Continuous use of the Flint River at such demand rates would:
  - a. Pose an increased microbial risk to public health (Flint River vs. Lake Huron source water)
  - b. Pose an increased risk of disinfection by-product (carcinogen) exposure to public health (Flint River vs. Lake Huron source water)
  - c. Trigger additional regulatory requirements under the Michigan Safe Drinking Water Act (LT2ESWTR)
  - d. Require significant enhancements to treatment at the Flint WTP, beyond those identified in the TYJT report (see item 5 below).
  - e. Water Resource Division is evaluating potential impacts to NPDES wastewater discharge permits in downstream segments of the Flint River, as a result of decreased river baseflow caused by Flint WTP use.
5. The TYJT report does not adequately address increased requirements and costs associated with using the Flint River as a significant source for the Flint WTP, which are not necessary under a Lake Huron source water scenario. This includes:
  - a. The need to provide softening treatment
  - b. Limitations on disposal options for lime softening sludge
  - c. Increased ozone capacity, UV disinfection
  - d. Additional backup power, more power required for Flint River operation
6. The Flint WTP must operate at some minimum level and within a range of flow rates to maintain treatment effectiveness. Currently that minimum level is 9 MGD. This level may be reduced with additional capital costs to modify the WTP, not addressed in the TYJT report.
7. Allowing Flint WTP to blend water with DWSD sets a new precedent that could pose future consequences with other DWSD customers.
8. Costs impacts to remaining DWSD customers would be similar under the proposed scenarios, only retaining 8 MGD of 30+ MGD total Flint/Genesee Co. demands, based on the following:
  - a. Genesee County distribution system demands are pulling out of DWSD regardless of the decisions by Flint WTP
  - b. Flint's need to utilize the Flint River as a source
9. ODWMA anticipates cost savings under the KWA proposal will be leveraged to provide additional improvements to the City of Flint water distribution system, improving efficiency and providing additional cost benefits. The KWA water withdrawal permit (2009-001) includes the required implementation of conservation measures that would also drive these distribution system improvements.
10. Major cost discrepancies in TYJT analysis
  - a. Engineering, Legal, Administration, Contingency – TYJT appears to have effectively double charged for these costs in their KWA estimates without adequate justification
  - b. Pumping facilities – TYJT cost estimate methodology does not appear to address localized market costs and does not distinguish fixed and variable costs in its comparison analysis.
11. Remaining DWSD customers in Lapeer County could potentially see water quality impacts as a result of Flint joining KWA, if they remain with DWSD. However, indications to ODWMA are that these communities are currently in final negotiations with KWA for service, which would make this a non-issue.
  - a. City Lapeer
  - b. City of Imlay City

Additional response to the TYJT report has also been provided by Rowe Engineering to Flint EFM, Mr. Ed Kurtz. (Copy Attached)

ODWMA has continued to meet on a regular basis with KWA, Genesee County, and the City of Flint regarding these water supply proposals.

ODWMA will continue to provide any additional detailed analysis requested by Treasury or the DEQ Executive Office.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

## Thelen, Mary Beth (DEQ)

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Sunday, October 28, 2012 2:12 PM  
**To:** Creagh, Keith (DNR); Clover Adams, Jamie (MDA); Sygo, Jim (DEQ)  
**Cc:** Creal, William (DEQ); Shekter Smith, Liane (DEQ); Anderson, Madhu (DEQ); Datema, Maggie (DEQ)  
**Subject:** FW: Briefing on Karegnondi Project/City of Flint

Andy Dillon is getting pulled into this issue. Andy asked the Governor at the Group Executive meeting if the administration has a position on this project. The Governor said he needs to know more. I think we have all been approached on this project. Keith/Jamie, have you taken a position on this? Bill, am I correct in saying this will have effect on DWSD?

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

**From:** Dillon, Andy (Treasury)  
**Sent:** Wednesday, October 24, 2012 4:18 PM  
**To:** Wyant, Dan (DEQ)  
**Subject:** Fwd: Briefing on Karegnondi Project/City of Flint

Sent from my iPad

Begin forwarded message:

**From:** "Fraser, Roger (Treasury)" <FraserR1@michigan.gov>  
**To:** "Dillon, Andy (Treasury)" <DillonA2@michigan.gov>, "Stibitz, Brom (Treasury)" <StibitzB@michigan.gov>, "Koryzno, Edward (Treasury)" <KoryznoE@michigan.gov>, "Mike Brown (mbrown@reinvestflint.org)" <mbrown@reinvestflint.org>  
**Cc:** "Hichez, Amy (Treasury)" <HichezA@michigan.gov>, "Cousineau, Sara (Treasury)" <CousineauS@michigan.gov>, "mmurray@cityofflint.com" <mmurray@cityofflint.com>  
**Subject:** Briefing on Karegnondi Project/City of Flint

Discussion: Brief Treasury on pros and cons of Karegnondi project. There are concerns about cost and engineering constraints. Report for Flint in late 90's....suggested this project was not financially feasible.

Attendees:

State of Michigan  
Andy Dillon - Treasurer  
Brom Stibitz - Policy Advisor  
Roger Fraser - Deputy Treasurer  
Ed Koryzno - Office of Fiscal Responsibility

City of Flint - (confirmed attendance with Maxine Murray)  
Mike Brown - City Administrator

▲ Jerry Ambrose, Finance Director

Howard Croft, Director of Infrastructure & Development

Genesee County – (confirmed attendance with Maxine Murray)

Jeff Wright, Genesee County Drain Commissioner

John OBrian, Chief Deputy Drain Commissioner

Dave Jansen, Assistant Director, Genesee County Drain Commission

Rick Freeman, Rowe Professional Service

Tucker, Young, Jackson & Tull – (confirmed attendance with David Guastella)

George Karmo, President

David Guastella

Awni Qaqish



**Olszewski, Rosemarie (DEQ)**

---

**From:** Stibitz, Brom (DTMB)  
**Sent:** Thursday, March 21, 2013 5:00 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Dillon, Andy (Treasury)  
**Subject:** FW: Flint Scenarios  
**Attachments:** Flint Scenarios FY 2013-14.pdf; Recent DWSD Flint Supply Cost Options.pdf; TYJT Recommendation DWSD vs Flint.pdf; flint water supply assessment final report 2-6-13.pdf

Andy asked that I pass this information along to you.

Summary of FY 2013-14 DWSD Cost Allocations to Flint Under Various Scenarios  
*Flint Only*

	Revenue Requirement	Rates and Charges		
		Fixed	Commodity	Avg Unit Cost
1 Status Quo ( <i>Flint Portion</i> )	12,574,900	379,304	13.01	20.39
2 Suggested Cct ( <i>Flint Portion</i> )	11,281,100	351,661	12.06	19.27
3 Change	(1,293,800)	(27,643)	(0.95)	(1.12)
4 % Change	-10.3%	-7.3%	-7.3%	-5.5%
5 Max Day Only	9,904,300	294,542	10.87	16.91
6 Change	(1,376,800)	(57,119)	(1.19)	(2.36)
7 % Change	-13.9%	-19.4%	-10.9%	-14.0%
8 Add CTA Line to BP	10,093,100	310,271	10.87	17.23
9 Change	188,800	15,729	0.00	0.32
10 % Change	1.9%	5.1%	0.0%	1.9%
11 CTA to BP / Flint only to FWTP	12,446,300	506,371	10.87	21.25
12 Change	2,353,200	196,100	0.00	4.02
13 % Change	18.9%	38.7%	0.0%	18.9%
14 Add CTA Line to FWTP	10,191,200	318,450	10.87	17.40
15 Change	(2,255,100)	(187,921)	0.00	(3.85)
16 % Change	-22.1%	-59.0%	0.0%	-22.1%
17 CTA to FWTP / Buy existing 72	10,009,600	303,315	10.87	17.08
18 Change	(181,600)	(15,135)	0.00	(0.32)
19 % Change	-1.8%	-5.0%	0.0%	-1.9%
20 Cumulative Change	(2,565,300)	(75,989)	(2.14)	(3.31)
21 Cumulative % Change	-20.4%	-20.0%	-16.4%	-16.2%

	Assumptions				
	Avg Day <i>mgd</i>	Max Day <i>mgd</i>	Peak Hour <i>mgd</i>	DWSD Investment	
				CTA \$	Flint Only \$
1 Status Quo	24.6	45.6	47.7	0	0
2 Suggested Contract	23.4	40.6	42.4	0	0
3 Max Day Only	12.0	18.0	18.0	0	0
4 Add CTA Line to BP	12.0	18.0	18.0	62,290,800	0
5 CTA to BP / Flint only to FWTP	12.0	18.0	18.0	62,290,800	32,391,300
6 Add CTA Line to FWTP	12.0	18.0	18.0	94,682,100	0
7 CTA to FWTP / Buy existing 72	12.0	18.0	18.0	94,682,100	(2,500,000)

TFG

# DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contr:

## Capacity

Flint ADD: 0.00 MGD - MCF/Day  
 DWSD ADD: 12 MGD 1,604 MCF/Day

## Annual Volume

Flint: - MCF  
 DWSD: 585,561 MCF

## 2013 Cost of Supply

Flint WTP O&M: - /MCF \$ - /Yr  
 DWSD: \$ 17.08 /MCF \$ 10,001,390 /Yr

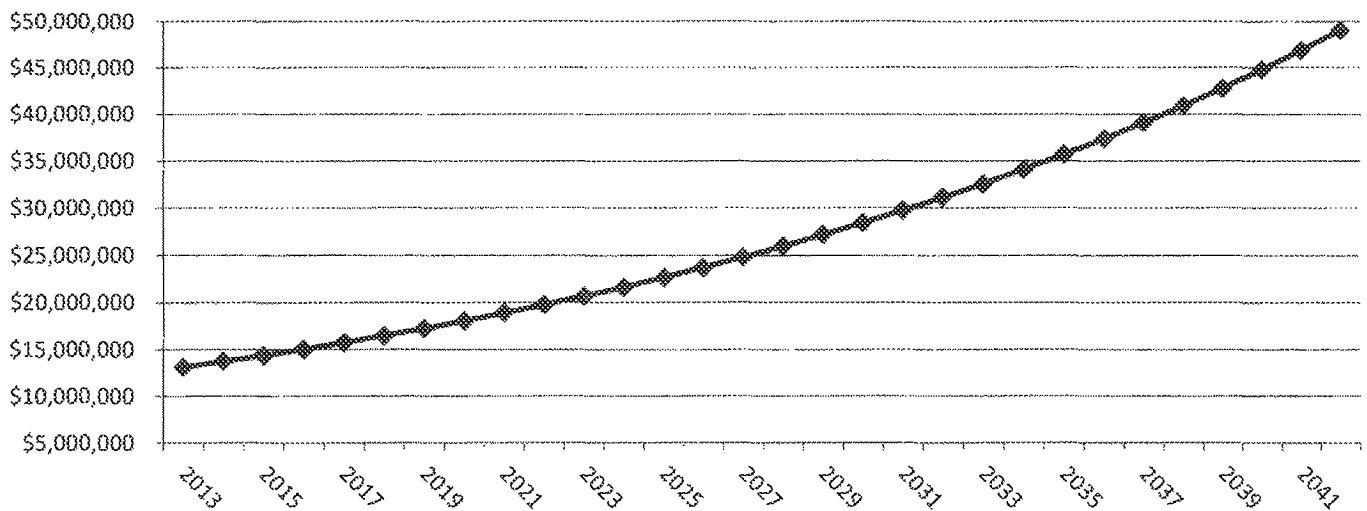
## Escalation/Inflation Rate

Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

## Capital Expenditure

Amount: \$ -  
 Reserve: \$ - 0% Reserve Rate: 0.00%  
 Amount plus Reserve: \$ -  
 Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$0

## DWSD 18 MGD Maximum Day Customer Twinning Option DWSD Owns Both Lines



# DWSD Worksheet : 18 MGD Maximum Day Customer with Model Con

## Capacity

Flint ADD:	0.00 MGD	- MCF/Day
DWSD ADD:	12 MGD	1,604 MCF/Day

## Annual Volume

Flint:	- MCF
DWSD:	585,561 MCF

## 2013 Cost of Supply

Flint WTP O&M:	- /MCF	\$ - /Yr
DWSD:	\$ 17.40 /MCF	\$ 10,188,770 /Yr

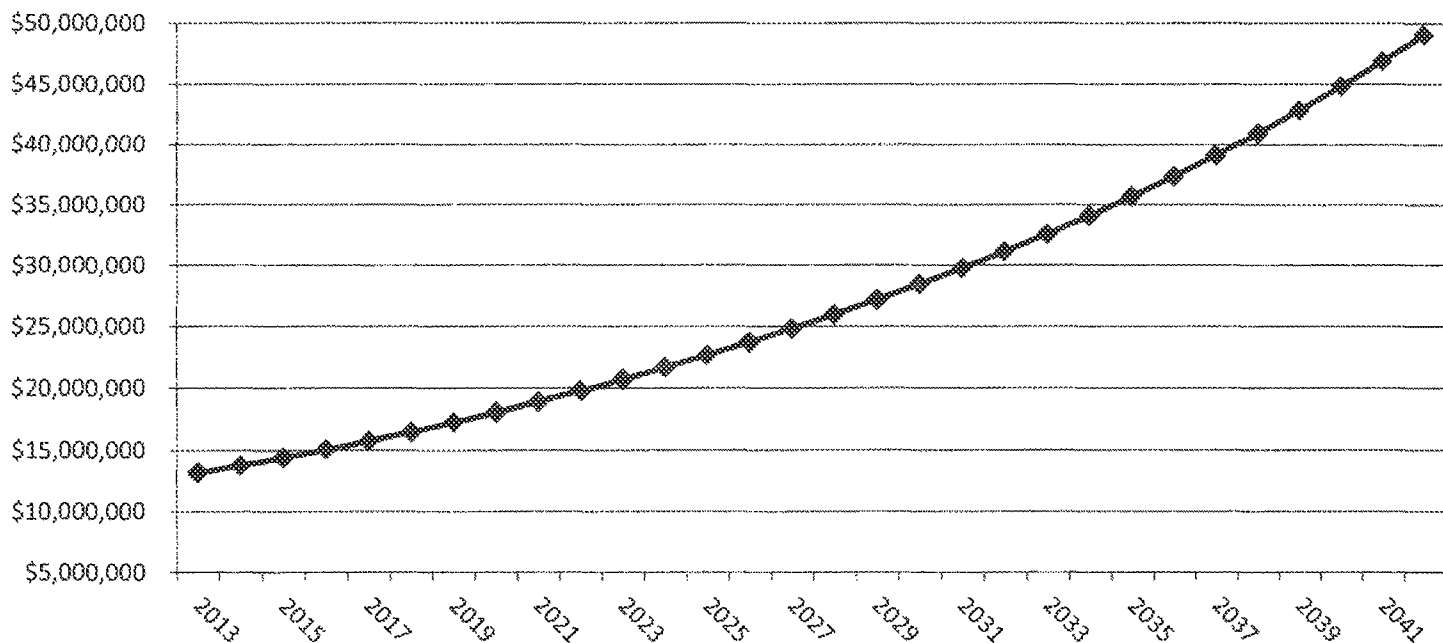
## Escalation/Inflation Rate

Flint:	4.51% /Yr
DWSD:	4.7% /Yr

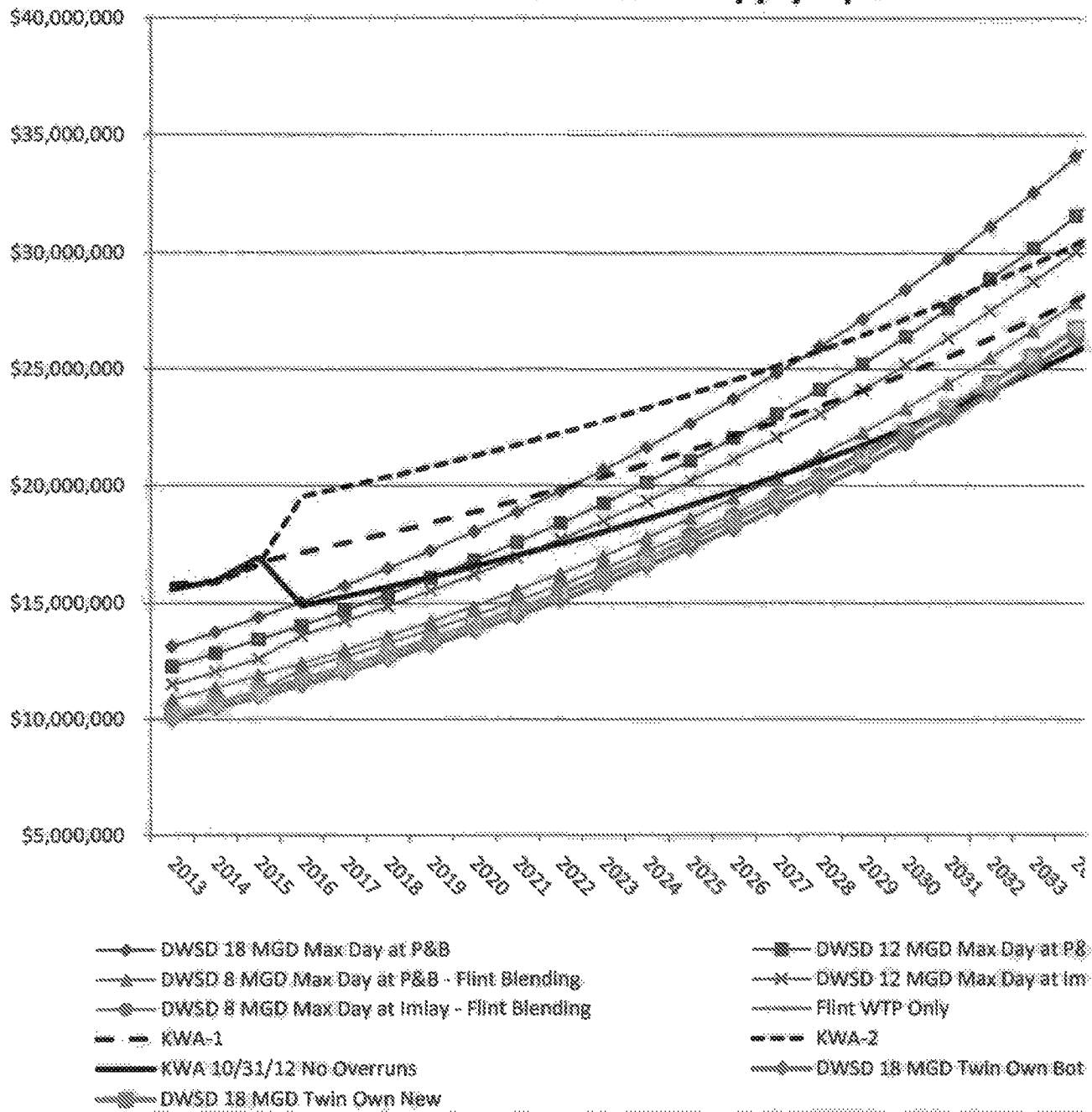
## Capital Expenditure

Amount:	\$ -	
Reserve:	\$ -	0% Reserve Rate: 0.00%
Amount plus Reserve:	\$ -	
Revenue Bond Rate:	5%	
Number of Years:	25	
Annual Cost:	\$0	

**DWSD 18 MGD Maximum Day Customer Twinning Option DWSD Owns New Line**



# Flint Water Supply Options





**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

At the request of the Treasurer, Tucker, Young, Jackson, Tull, Inc. (TYJT) makes the following recommendation to the Department of Treasury concerning Flint's water supply alternatives. Based on the financial analysis performed of the various options presented by DWSD to continue treated water service to Flint compared to Flint being supplied by the new KWA untreated water system, TYJT believes that several of the options presented by DWSD are lower in cost currently and over the long run than the one offered by KWA. TYJT also believes that DWSD's most recent offer (subsequent to the submittal of our report) to build a smaller parallel water main from Imlay to Flint, funded by the entire DWSD base of customers, is the best solution offering the least cost alternative and the required redundancy by MDEQ.

Furthermore, since a majority of the KWA system has not been designed and none of the system has been constructed, there is an additional risk that the cost of the KWA system may actually be higher than estimated due to potential construction delays and unforeseen conditions. This risk to Flint could be substantial since the city is responsible for 30 percent of the KWA design and construction costs while still having to purchase water from DWSD during the construction period.

Finally, there are other issues that were identified in our report that may result in risks to Flint if it were to join KWA that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

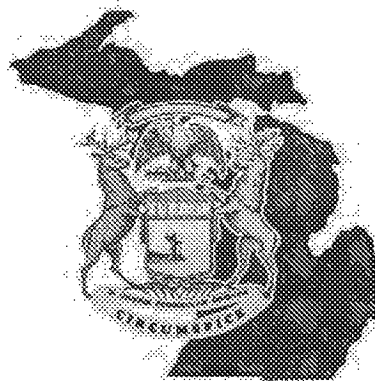
- DWSD's supply to Flint is via a 72-inch water main from Imlay City. This main also supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 million gallons. If Genesee and Flint move to KWA then the three remaining communities' consumption would most likely not be large enough to maintain fresh water in DWSD's pipeline (due to loss of chlorine residual). DWSD may consider shutting down the 72-inch line completely due to the water quality concerns, which would then create an additional burden for Imlay, Mayfield and GLCUA to finance treated water supplies.
- The KWA supply option is counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating from another water system is in contradiction to the program.
- There is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.
- Although Flint will be responsible for 30 percent of the construction cost, they will only have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs. Their position on the KWA Board will not provide them an ability to "control their own destiny," as they have stated to the Treasury.

---

**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**  
**February 2013**

For Submittal to:  
**State of Michigan, Department of Treasury**



Submitted by:

**TY** TUCKER, YOUNG,  
**JD** JACKSON, TULL INC.

CONSULTING ENGINEERS-PLANNERS  
815 Griswold Suite 600  
Detroit, Michigan 48226  
(313)963-6612 FAX (313)963-2156

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## ***Appendices***

Appendices A – Meeting Minutes

Appendix B – Cost Worksheets

## ***1. INTRODUCTION***

Tucker, Young, Jackson, Tull, Inc. (TYJT), at the request of the State Treasurer performed an analysis of the water supply options being considered by the City of Flint. The City of Flint is presently supplied potable water from the Detroit Water and Sewerage Department (DWSD). This supply is from a single 72-inch water main that terminates at a master meter located at Potter and Baxter. Additionally, downstream of the DWSD master meter, Flint supplies its customer Genesee County. The City of Flint also operates a water treatment plant that uses the Flint River as its source of supply to provide back up and redundancy to the DWSD supply as required by MDEQ.

The Karegnondi Water Authority (KWA) is planning on constructing a raw water supply system that could provide Lake Huron water to the Flint Water Treatment Plant. Flint's existing plant would be upgraded to treat the new raw water source.

The State Treasurer has appointed an emergency financial manager for the City of Flint. As such the Treasurer has requested TYJT to provide an analysis of the water supply options to assist the Treasurer in determining any potential risk and the best course going forward for supplying potable water to the City of Flint.

### ***Report Organization***

The following sections of this report are described below:

Section 2 – The basis of the analysis is described in this section. The options include the KWA option and several options offered by DWSD.

Section 3 – A significant amount of information and data was collected including memorandums, reports, drawings, financial reports, and other documents. This section summarizes the information used in the analysis.

Section 4 – This section describes the evaluation of the cost of supply for the Flint options. The costs are comprised of the initial cost of operations plus the annual rate of escalation/inflation.

Section 5 – The evaluation process used to analyze the construction costs associated with the KWA supply system is described in this section. Additionally, the cost of financing the capital requirements is described.

Section 6 – This section presents the financial review of the options considered to supply potable water to Flint. A summary of these options is also provided.

Section 7 – In addition to the financial analysis other considerations were identified that should be considered in understanding the risks and determining the best option to supply Flint. They include items related to cost, redundancy and reliability, and Flint's ability to control their future cost of water supply.

## ***2. FLINT WATER SUPPLY OPTIONS***

Two water purveyor options were evaluated; the KWA water supply system and continued supply from DWSD. Both suppliers would provide water from Lake Huron as the source. The KWA system is a raw water supply, which means that the water would have to be treated by Flint before distributing the potable water to its customers. The DWSD supply is potable or “finished” water and would not need additional treatment.

Additionally, an option for the Flint WTP to supply the City of Flint without being supplied from either DWSD or KWA was initially considered. The preliminary investigation evaluated the cost associated with the required improvements to the plant and to the Flint River dam system. Although it appeared that this was a viable option, Flint in a meeting on December 20, 2012 with the Treasury, stated that the City did not want to pursue the option and it is no longer being considered.

### ***Karegnondi Water Authority (KWA) Lake Huron Water Supply***

The KWA water supply system schematic is shown in Figure 2-1. The system is comprised of an intake in Lake Huron that supplies water to the Lake Huron Pump Station (LHPS). The LHPS lifts the water and pumps it through an approximately 22 mile long 60-inch pipeline. The pipeline terminates at a 5 MG reservoir and is then pumped from the Intermediate Pump Station (IPS) through approximately 26 miles of 60-inch and 18 miles of 30-inch pipeline to the existing Flint WTP. Downstream of the IPS, approximately half way to the Flint WTP, the 60-inch line would also supply a new Genesee County WTP.

The raw water transmission system has a 60 MGD capacity and is sized to deliver a maximum of 18 MGD to the Flint WTP with an average day supply of 12 MGD. Improvements at the Flint WTP would also be required to treat the lake water as the plant is currently designed to treat the Flint River water.

The term of the KWA contract for Flint is 40 years.

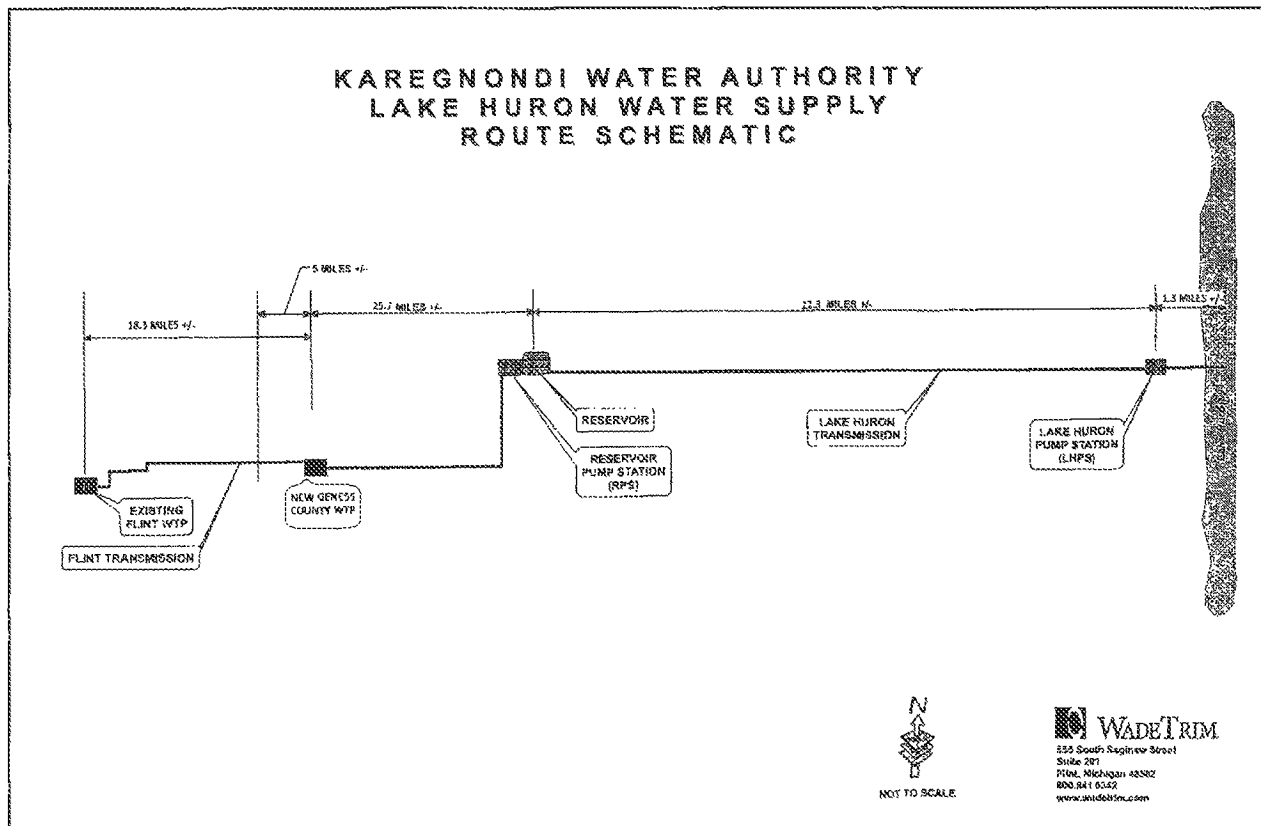
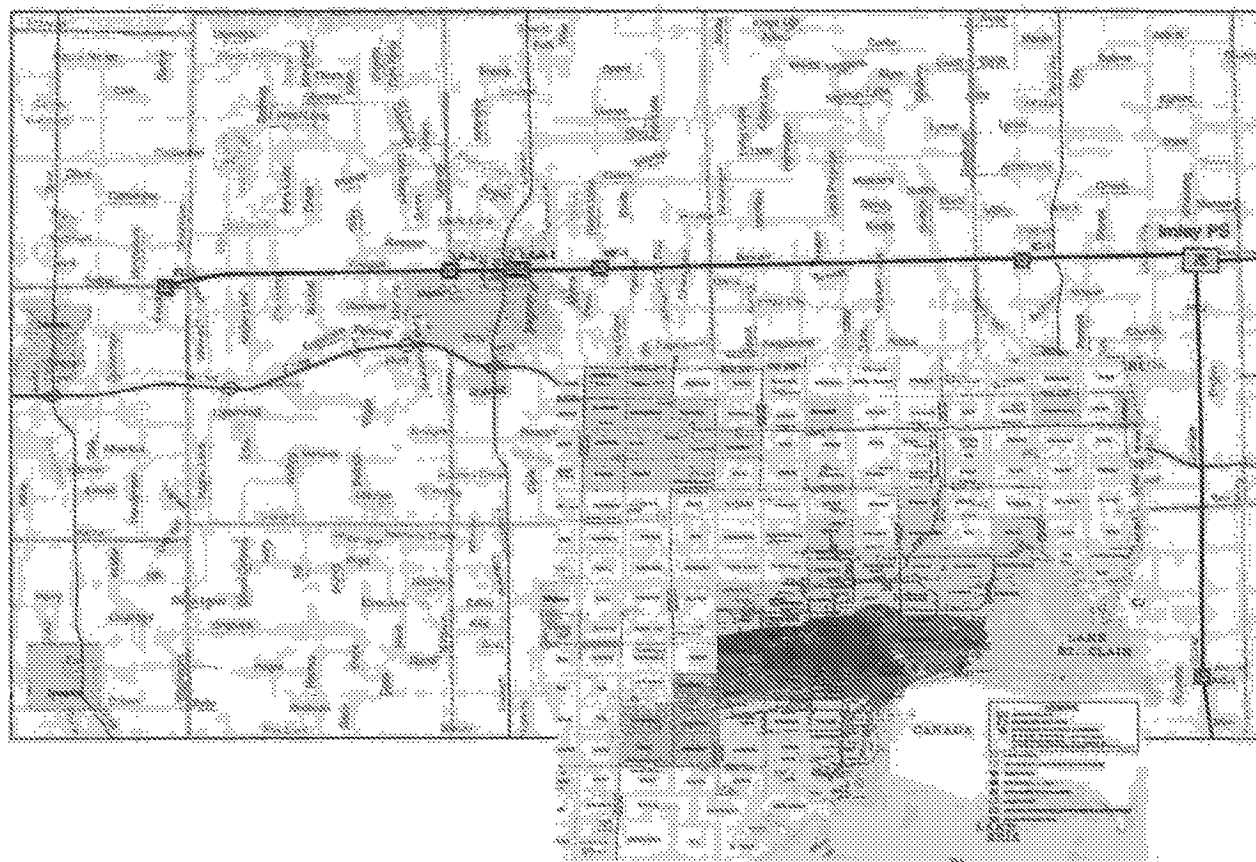


Figure 2-1: KWA Raw Water System

### *DWSD Water System*

The DWSD system schematic is shown in Figure 2-2. Flint is currently supplied by DWSD at Master Meter FL-1, located at Potter and Baxter. Flint typically gets its water from the Lake Huron WTP, located in Fort Gratiot, Michigan; near the Lake Huron shoreline. Water is treated and pumped at the Lake Huron WTP and supplied through a 120-inch pipeline to an intermediate pump station called the Imlay Pump Station. The Imlay Pump Station has 20 MG of reservoir capacity. Depending on the time of year and the DWSD system demand, water is either bypassed directly to Flint or it is re-pumped at Imlay. It should be noted that the DWSD supply to Flint is part of a very large water system and during emergencies or outages water can be supplied from the south up to Flint in lieu of the Lake Huron facility.



**Figure 2-2: DWSD Water System**

The pipeline from Imlay to FL-1 is a 72-inch pipeline. It has been estimated that the 72-inch line serving Flint has a capacity in excess of 90 MGD.

DWSD has presented several contractual options to Flint and all of them are based on Flint signing a new 30 year contract. The options shown in Table 2-1 are based on two different supply points; one at the current master meter location FL-1 at Potter and Baxter (P&B) and the other at the location of the Imlay Pump Station. The reason for the varying options is to provide a lower water rate at the Imlay Station, since the DWSD rate formula is based on distance and elevation factors related to the supply location.

The rates are also dependent on the maximum amount of water DWSD supplies. As example, if DWSD supplies a maximum day demand of 18 MGD that would equal the entire amount of water required by Flint.

For the options less than the maximum of 18 MGD means that the Flint WTP would supplement the difference by supplying water treated from the Flint River. These options are known as "blending" and would allow for Flint to blend two sources of water to supply its customers; the Flint River using the Flint WTP and Lake Huron from DWSD system.

Option/Location	Available Day Demand
18 MGD Maximum Day Customer – FL-1	12 MGD
12 MGD Maximum Day Customer – FL-1	8 MGD
8 MGD Maximum Day Customer – FL-1	8 MGD
12 MGD Maximum Day Customer - Imlay	12 MGD
8 MGD Maximum Day Customer - Imlay	12 MGD

**Table 2-1: DWSD Supply Options**

### ***3. DATA COLLECTION***

During the course of the investigation several documents were used to perform the analysis. The names of the documents are listed below for reference.

#### KWA and Flint

- Preliminary Engineering Report, Lake Huron Water Supply Karegnondi Water Authority, September 2009;
- Analysis of the Flint River as a Permanent Water Supply for the City of Flint, July 2011;
- Cost Comparison, KWA vs. DWSD, Letter to Mr. Kurtz, October 31, 2012;
- Lake Huron Supply Study, KWA, Appendix 20, October 2012 Preliminary Report Update, Final Report (DRAFT), October 4, 2012;
- Articles of Incorporation of Karegnondi Water Authority, endorsed in 2010;
- Karegnondi Water Authority Bylaws, October 26, 2010;
- KWA Raw Water Supply Contract;
- Flint WTP Statement of Revenues and Expenditures 09' – 12';
- GCDC Division of Water and Waste Services Financial Statements 03' – 11'; and
- Assorted emails with further clarification of questions and documentation.

#### DWSD

- Historical Rates and Charges to Flint 04' – 13';
- Historical Rates and Charges to Flint with Hypothetical Model Contract 10' – 13';
- 2013 Rates and Charges for the following options:
  - 18 MGD Maximum Day Customer at FL-1;
  - 12 MGD Maximum Day Customer at FL-1 (Flint blending\*);
  - 8 MGD Maximum Day Customer at FL-1 (Flint blending\*);
  - 12 MGD Maximum Day Customer at Imlay (Flint blending\*);
  - 8 MGD Maximum Day Customer at Imlay (Flint blending\*); and
- Assorted emails with further clarification of questions and documentation.

- \* Flint blending based on DWSD supplying two-thirds and Flint one-third of 12 MGD average day demand.

Two meetings were also held; one with DWSD and one with Flint and Genesee County representing KWA. The meetings were held on November 19, 2012 and November 20, 2012, respectively. Minutes from these meetings are included in Appendix A.



#### 4. COST OF SERVICE

Information provided by DWSD, Flint, and representatives of the KWA were used in the cost of service evaluation. To evaluate the annual escalation/inflation rate over the planning period, the rate adjustment for DWSD was estimated based on the recent rate adjustment history. For the KWA system both the estimated cost of operations when the system begins supplying water and the annual rate adjustment or inflation was evaluated. The existing cost of operations and escalation for the Flint WTP was based on actual costs provided and then adjusted depending on the scenario considered. This section describes the evaluation process and the rates used in the analysis.

##### *DWSD Water Supply*

The City of Flint has been a customer of DWSD since 1967. The Flint WTP has been maintained as a backup to the DWSD system. As indicated previously, several options were provided by DWSD depending on the type of service Flint was to select. The unit cost of water for each of these options is shown in Table 4-1. These rates are based on DWSD's FY13, which are current until July 2013.

Service Option	Maximum Day Demand (MGD)	Unit Price (\$/AFY)
18 MGD Maximum Day Customer – FL-1	12	16.37
12 MGD Maximum Day Customer – FL-1	8	16.31
8 MGD Maximum Day Customer – FL-1	8	12.68
12 MGD Maximum Day Customer - Imlay	12	14.38
8 MGD Maximum Day Customer - Imlay	12	11.11

**Table 4-1: Cost of DWSD Supply Options**

To determine annual escalation rate, DWSD's last 10 years of history was used along with other large urban water systems in Michigan. The water systems used for benchmarking comparison were: Lansing, Grand Rapids, and Saginaw.

Table 4-2 identifies the annual and average rate of increase to Flint based on supplying water either to the current FL-1 at Potter and Baxter or Imlay. Note the last three years of the rates (FY 2011 through FY 2013) assumes that Flint's cost would be based on the new 30 year contract; FY 2011 being the first year that the new contract was available.

Year	Average Unit Cost (\$/1000)	Annual Change (%)
2004	11.06	
2005	10.24	-7.4
2006	10.56	3.1
2007	11.09	5.0
2008	11.35	2.3
2009	13.07	15.2
2010	11.73	-10.3
2011	13.89	18.4
2012	15.08	8.6
2013	16.24	7.7
Average		5.2%

From FL-1

Year	Average Unit Cost (\$/1000)	Annual Change (%)
2004	11.06	
2005	10.24	-7.4
2006	10.56	3.1
2007	11.09	5.0
2008	11.35	2.3
2009	13.07	15.2
2010	11.16	-14.5
2011	12.23	9.6
2012	13.28	8.6
2013	14.32	7.8
Average		5.2%

From Imlay

Table 4-2: Recent DWSD Water Rates

Audited financial reports were used to determine the rate of inflation associated with other three large municipal systems. The results are shown in Table 4-3.

Water System	Year Range	Inflation Rate (%)
Lansing	05'-12'	4.6
Grand Rapids	04'-11'	1.6
Saginaw	04'-11'	7.0

Table 4-3: O&M Inflation Rates of Other Large Water Systems

Based on the information analyzed from DWSD and the other communities, it was determined that a fair annual rate of inflation for operations and maintenance cost for the analysis should be 4.4%. The 4.4% has historical significance from Flint's current water supplier and falls within the range of the other communities.

### ***KWA Water Supply***

The initial projected O&M cost for the KWA supply would be comprised of KWA's O&M costs as well as Flint's O&M costs. Because there was limited information provided, the initial estimated rate of \$1.50/MCF was used. This rate is based on information from the cost comparison analysis attached to the letter to Mr. Kurtz, dated October 31, 2012.

The KWA cost evaluation used an annual O&M inflation rate of 5%. To validate this rate a similar analysis to DWSD's operations and maintenance annual rate of inflation was used. First, in discussions with Flint and the Genesee County Drain Commission (GCDC), they believed that the annual rate of inflation for the new KWA system would be similar to the GCDC Water & Waste Services (WWS). Additionally, two large transmission systems were used to benchmark the inflation rates: the Southeastern Oakland County Water Authority (SOCWA) and the Ypsilanti Utility Community Authority (YUCA). Although both of these systems transmit finished water opposed to raw water, they were considered similar enough for comparison as they are comprised of only large water mains, pumping facilities and storage.

Once again audited financial statements were used to calculate the inflation rates. A summary of the findings are shown in Table 4-4. Based on the fact that the information analyzed showed a large difference between the two systems, it was determined that the KWA assumption of 5% was a good rate of inflation to use in the financial analysis. This rate is almost equally between the GCDC rate and the other two transmission systems.

System	Water Reservoir	Average Inflation Rate (%)
GCDC WWS	03'-11'	10.5
SOCWA	04'-12'	-
YUCA	04'-12'	0.7

**Table 4-4: O&M Inflation Rates of Other Comparable Systems to KWA**

### ***Flint WTP***

The Flint WTP currently serves as a backup supply to the DWSD service to Flint. To maintain backup operations, the City of Flint operates the plant approximately 20 days each year. Flint indicated that the average production rate when they operate is 11 MGD.

For the blending options and the KWA supply considered, Flint would be required to operate its plant all year around. Therefore, their operating and maintenance costs were evaluated and adjusted to determine an annual cost associated with year-round operations.

The Flint WTP provided three years of operating costs for the assessment. Additionally, reports listed in Section 3 were also used as reference to determine both operating costs for the plant processing Flint River water (blending options) and Lake Huron raw water (KWA option).

Major cost centers were analyzed to estimate annual operation and maintenance. They included: labor, utilities, chemicals and residual management. In general, as recommended by the Flint plant staff, labor and overhead were increased from the current costs by two-thirds. Additionally, variable costs for power, chemicals and residual cost were increased to estimate full time treatment at the Flint WTP. Data from the KWA Preliminary Report and annual operating data for the Flint WTP (provided separately) were analyzed to make these forecasts.

The annual operating and maintenance costs developed for Flint WTP used are shown in Table 4-5.

Raw Water Supply	Annual Daily Production (MGD)	Estimated Annual O&M Cost
Flint River (Blending with DWSD)	4	\$5,895,097
Lake Huron (Supplied by KWA)	12	\$7,913,118

**Table 4-5: FY 13 O&M Costs for Year-round Operations**

It was determined that a fair annual rate of inflation for operations and maintenance cost for the Flint WTP plant should be 4.51%. The 4.51% is an average of Lansing, Grand Rapids and Saginaw facilities.

## 5. CAPITAL REQUIREMENTS

Large capital investments would be required by Flint and GCDC to construct the KWA supply system. Furthermore, some of the options presented by DWSD (supply point from Imlay) would require the purchase by Flint of DWSD's 72-inch water main. Performing the financial analysis; therefore, required an analysis of the KWA construction cost estimate for the transmission system and Flint WTP improvements.

Revenue bonds were also identified as the source of financing the new supply system and associated improvements. This section describes the assumptions made and the interest used for financing the improvements.

### *KWA Supply System*

The most current cost estimate of the KWA system was presented in the document titled; Lake Huron Supply Study, KWA, Appendix 20, October 2012 Preliminary Report Update, Final Report (DRAFT), October 4, 2012. The cost of construction is estimated at \$272,421,558. Flint's portion would be 30% or \$81,726,467.

Due to the significance of this expenditure, a detailed review of the cost was performed and is presented in this section. The analysis was performed based on the main elements of the supply system: the lake intake, the two pumping stations, and the transmission pipeline. Additionally, an analysis was performed related to construction contingencies and other costs such as engineering, legal, and administration.

### **Lake Intake**

KWA representatives indicated in a meeting in November that the design documents for the intake were at 90% and that it was planned for advertisement in January 2013. A summary of the estimate is shown in Table 5-1.

Item	Amount
Intake and Crib	\$22,076,850
ELAC at 25%	5,519,213
Property	2,300,000
Total	\$29,896,063

Table 5-1: KWA Intake Cost Estimate

Based on the evaluation, it appeared that the cost estimate was reasonable. Given that the design was nearly complete, the engineering, legal, administration, and construction contingencies (ELAC) at 25% were also found to be appropriate.

## Pumping Stations

KWA representatives indicated that the pump stations were estimated at a level of design less than 15%. Therefore, in addition to an evaluation of their cost estimate, other water pumping station costs were used for comparison. Additionally, contractors were also contacted for costs. Table 5-2 summarizes the KWA cost estimate compared to our cost estimate performed for the Treasury.

Description	Cost	Estimate	T/T	Estimate
Pumping Stations		\$24,618,080		\$54,573,314
Land for Intermediate Pump Station and Reservoir		—		75,000
Subtotal		\$24,618,080		\$54,648,314
ELAC for Construction	25%	6,154,520	30%	16,394,494
Total		\$30,772,600		\$71,042,808

Table 5-2: Pumping Stations Cost Estimate

Two things to note regarding the difference in the cost estimates; firstly, there is a large difference in the cost estimates of the pumping stations. The estimate developed for the Treasury used several other pumping stations construction costs from Southeastern Michigan and discussions with contractors. These costs were then computed on a \$/MG's for comparison.

Secondly, our estimate for the Treasury is based on an ELAC of 30% instead of KWA's 25%. Although 25% was acceptable for the intake, it is believed to be too low for the pumping station estimate given that the engineering effort is less than 15%.

## Transmission Main

Although the specific route for the transmission main was not provided, an estimate was calculated based on the general information provided. Once again, the KWA estimate was based on a level of design less than 15%. The estimate performed for the Treasury used the line items provided by KWA for the pipeline and also consulted with contractors to evaluate the cost of construction. The comparison is shown in Table 5-3.

Although the cost of construction of the pipeline is similar, a value of 30% was used for ELAC due to the level of design. Additionally, KWA did not believe there would be any additional costs for easements; however, this did not seem practical. Therefore an estimate for acquiring the easements was added to the Treasury estimate and is based on the 277 easements identified by KWA. The cost shown includes surveying, legal, engineering, administration, etc.

Description	Cost	ELAC	Total
Transmission Mains	\$166,202,316		\$167,419,530
ELAC for Construction	25% 41,550,579	30%	50,225,859
Subtotal	\$207,752,895		\$217,645,389
Easements	--		1,166,170
<b>Total</b>	<b>\$207,752,895</b>		<b>\$218,811,559</b>

Table 5-3: Transmission Pipeline Cost Estimate

### Other KWA Costs

In prior estimates of the construction cost, KWA used an ELAC of 37%. In this case it could be considered that the engineering effort associated with the design would have been included. However, it is believed that KWA's reduced ELAC of 25%, does not include the design effort. Additionally, it would be prudent to assume that the owner would want a construction manager during construction of this large project. A summary of these costs are shown in Table 5-4.

Description	Amount
Design Engineering for Pumping Stations and the Transmission Pipeline	\$16,939,581
Construction Management at 5% of Project Cost Estimate of \$217,645,389	14,434,609
Administration	349,440
Legal, Easements, Contract Documents	831,000
<b>Total</b>	<b>\$32,554,630</b>

Table 5-4: Other Costs

### Summary Comparison

A summary of the two cost estimates are shown in Table 5-5. Based on the comparison, the estimate performed by TYJT shows a higher cost to Flint by approximately \$25,000,000.

Note that there are two other costs shown in the summary that were not previously addressed; power and backup power. Regarding the cost of providing power to the pumping facilities, the cost of \$4,000,000 appears reasonable.

The KWA has repeatedly indicated that backup power is not needed. Backup power is a standard practice in the water industry. Furthermore, a loss of power at either pumping facility will prevent the supply of water to both Flint and Genesee County. For these reasons, the cost of providing backup power was included in our estimate for the Treasury.

Itemization	KWA Estimate	TWT Estimate
Intake/Crib	\$ 27,596,063	\$ 27,596,063
Pump Stations	30,772,600	71,042,808
Transmission Mains	207,752,895	217,645,389
Power	4,000,000	4,000,000
Redundant Power for PS		1,273,200
Land for Lake Huron Pumping Station	2,300,000	2,300,000
Design Engineering/PS and Transmission		16,939,581
Construction Management		14,434,410
Administration		349,440
Legal/Easement/Contract Documents		831,000
Easements		1,166,170
<b>Total</b>	<b>\$ 272,421,558</b>	<b>\$ 357,578,060</b>
<b>Flint Share at 30%</b>	<b>\$81,726,467</b>	<b>\$107,273,418</b>

Table 5-5: Total Cost Comparison

### ***Flint WTP Improvements***

The KWA analysis identified capital costs required to convert the existing WTP from river water treatment to treating lake water. The cost estimate was identified as \$7,100,000 in the 2009 report. This number was used in the our analysis, since additional information was not provided. For the purpose of the financial analysis; however, the \$7,100,000 was increased by 3% each year for three years to account for inflation.

### ***DWSD Imlay Station Supply Options***

The options identified by DWSD to supply service to Flint at the Imlay Pump Station would require Flint to purchase the 72-inch water main from Imlay to Master Meter, FL-1. The pipeline is approximately 25 miles long. The estimated cost provided by DWSD for estimating purposes is \$4,700,000.

### ***Financing***

The cost of financing the revenue bonds for the capital work was investigated. Based on conversations with local financial advisors knowledgeable in bond financing, an interest rate of 5% for the 25 year



period was considered acceptable. This is based on a Standard and Poor's bond rating of A without insurance.

Additional costs associated with the bond include the reserve and bond issuance fee. The bond holders will require a reserve of approximately 10% of the loan to be held for the 25 year payment period. The cost associated with the bond issuance has been estimated at 2.25% of the principal borrowed for the KWA project and 3% for the smaller loan associated with the Flint WTP improvements or the purchase of the 72-inch main.

Furthermore, since no revenue will be generated to pay on the bonds for the first three years that the system is being constructed, the cost associated with capitalizing the interest was also included.

Finally, interest on the reserve will be provided back to KWA and Flint. Although the interest is currently less than 1%, it was determined that a 3% rate would be more prudent long-term.

## 6. FINDINGS

Using the information described in the previous sections, a cost evaluation was conducted for the KWA supply and the DWSD options. Individual worksheets for each option are provided in Appendix B. For the purpose of comparison a 30 year period was used. This period includes the 3 year construction period, the 25 loan period and an additional two years to get a sense of the cost of operation after the loans have been paid.

There were three separate cost sheets prepared for the KWA option. The first cost sheet (KWA) is based on the cost estimate provided by KWA. The costs provided assumed no overruns or delay in construction. With KWA's own assumptions of an overrun in construction of 15% and a one year delay in operations, the KWA estimated cost becomes \$686,375,920 through Year 2042.

Since this cost estimate did not appear to include the financing of revenue bonds, another cost sheet (KWA-1) was developed that included KWA's cost estimate without overruns with the additional finance costs associated with the revenue bonds. A final cost sheet (KWA-2) includes the cost associated with the revenue bonds based on the estimate provided by TYIT for the Treasury.

A summary of the cost sheets provided in Appendix B are shown in Table 6-1. Figure 6-1 shows the cumulative annual costs associated with each option.

Option	Cost through 2042 (\$)	Ranking
DWSD 8 MGD Maximum Day at Imlay Station	634,795,488	1
KWA (10/31/12 No Overruns, As Provided)*	649,775,166	2
DWSD 8 MGD Maximum Day at FL-1	672,671,705	3
KWA-1 (10/31/12 No Overruns with Cost of Financing)	707,279,715	4
DWSD 12 MGD Maximum Day at Imlay Station	725,576,803	5
DWSD 12 MGD Maximum Day at FL-1	762,110,308	6
KWA-2 (Treasury Estimate)	766,784,313	7
DWSD 18 MGD Maximum Day at FL-1	821,226,268	8

\* \$686,375,920 with 15% overrun in construction and a one year delay in operations

**Table 6-1: Total Cost of Options through 2042**

Based on the analysis, it is prudent to assume the KWA water supply option costs would be somewhere between the KWA-1 and KWA-2 options. Therefore, the analysis indicates that the two DWSD options of supplying 8 MGD on a maximum day and up to 8 MGD on average are the least cost options for Flint. These options allow Flint to maximize the use of existing assets; the City of Flint's (the Flint WTP) and DWSD's (the existing 72-inch main).

Additionally, in recent conversations with the Treasury another option was discussed that could potentially be the most cost-effective solution. Currently the Flint WTP serves as a backup if service is

lost through either the DWSD or KWA pipeline. If the a twin pipe paralleling the DWSD 72-inch water main were constructed with interconnects with the 72-inch line, then the new water main could serve as the backup to Flint and the Flint WTP could be abandoned or potentially sold to Genesee County for their use.

The construction of the parallel pipeline would be considered in the DWSD capital expenditure as a Common to All (CTA) cost. This means that the capital cost of the pipeline would be shared by all DWSD customers and not just by Flint. Preliminary analysis of this option appears to be the most cost-effective of all the options discussed. However, a more thorough cost analysis is warranted and this approach would require an agreement between Flint and DWSD.

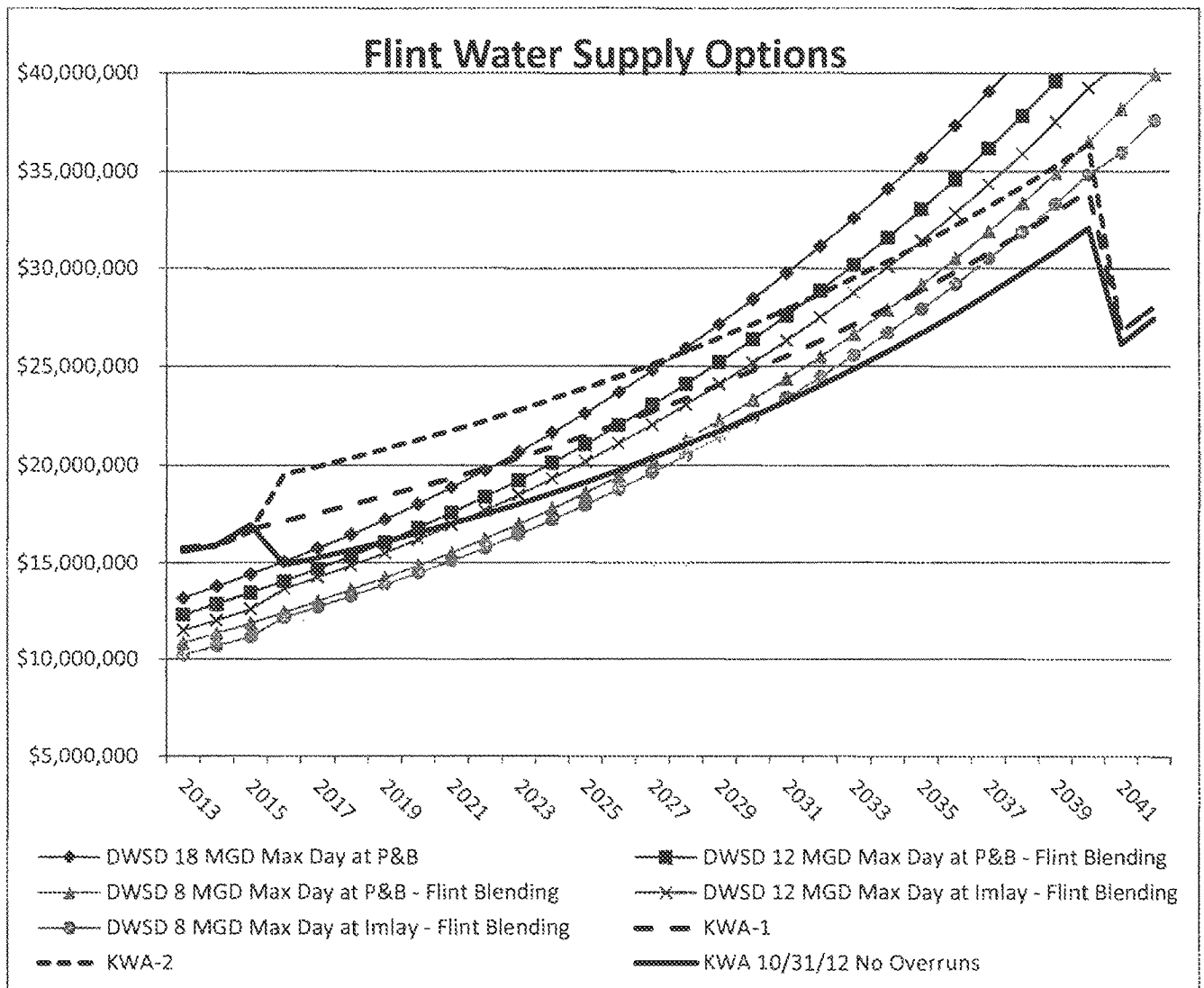


Figure 6-1: Flint Water Supply Options through 2042

## ***7. OTHER CONSIDERATIONS***

As part of the investigation other issues were identified that may result in risks to Flint that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

### ***Redundancy/Reliability***

In one of the first meetings related to this task assessment, which was held on November 1, 2012, the Genesee County Drain Commissioner, Mr. Jeff Wright, stated that one of the main reasons for pursuing the KWA supply option related to the lack of reliability of the DWSD system. He pointed to the Northeast blackout of 2003; a widespread power outage that occurred throughout parts of the Northeastern and Midwestern United States and Ontario, Canada, on Thursday, August 14, 2003. He stated that Flint and Genesee County were out of water for several days.

It is worth noting that this was a power outage of historic proportions that affected millions of Americans. However, DWSD did begin supplying water again relatively quickly in comparison to other major cities impacted by the same power outage.

Furthermore, the KWA supply system offers less redundancy to Flint than the current DWSD system. Under both options, Flint is supplied by a single pipeline; however, DWSD has backup power at all of its major facilities supplying Flint. The KWA system will not have a redundant power at its pumping facilities. This would be a major risk.

Currently, backup to the DWSD system for Flint is Flint's WTP using the Flint River as the source of supply. KWA has stated that the Flint River source would also be used as backup to Flint if the KWA supply through its pipeline was lost. However, since the Flint WTP would be upgraded to treat Lake Huron water under the KWA option, using the Flint River as a backup source would require the Flint WTP to maintain two process treatment streams.

In addition to Flint and Genesee County, the DWSD's 72-inch main supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 MG. Only supplying these three remaining communities would cause the water age to increase dramatically; somewhere in excess of three weeks old, before reaching the customers' master meters. Since the half-life of chlorine in the DWSD system is approximately 5 days, the chlorine would most probably be near zero requiring re-chlorination of the finished water upstream of the master meters.

Re-chlorinating is a costly and risky process due to the instability of chlorine gas. It is unknown whether DWSD would pursue this improvement or possibly abandoned the 72-inch pipeline.

If Flint is supplied by the KWA system, then DWSD supplying their other customers along the 72-inch water main may be reconsidered. Since the KWA system is a raw water supply, the communities would

either have to build a treatment facility to treat the water from KWA or find another water source for their communities.

### ***Additional Cost and Risk Considerations***

The design of the KWA supply and the construction of the system have not been completed; therefore, final costs and time to complete are unknown. Cost overruns and delays in completion will both negatively impact Flint's final cost. As example, if the project is not completed within the three year period, payment on the bonds will be due, but the revenue source needed from the sale of water could not be provided.

Furthermore, there is always a risk with large water system construction; especially those including an intake in the Great Lakes, pumping stations and rehabilitation of older water treatment plants. These risks include the potential of explosive gases in tunneling below Lake Huron, changing site conditions associated with the large number of miles of pipe installation and rehabilitating an older WTP, and the startup and debugging of the entire pumping system.

Flint has indicated that they have a high water loss. Not addressing this issue prior to sizing the Flint supply pipeline from KWA could cause the water main to be oversized along with its incremental cost in construction.

Also, the KWA supply option appears to run counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating to from another water system is in contradiction to the program.

Finally, there is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.

### ***Flint's Autonomy***

Flint has indicated that a major point of consideration is that they have no control over the rate increases issued to Flint by DWSD. All other counties supplied by DWSD have representatives on the Board of Water Commissioners (BOWC). The BOWC is one of the governing bodies that approve the water rates. Since Flint and Genesee County do not have a representative on the BOWC, Flint believes they are held "hostage" to DWSD's rates and cost of service.

This issue was stated in Flint's handout at the November 1, 2012 meeting. The handout is titled, "Flint Water Supply Future." However, it is worth noting in the same handout, Flint also identifies similar concerns with the governing board of the KWA system. Notably, that although Flint and Genesee County will be the only customers and Flint will be responsible for 30 percent of the construction cost,

they will have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs.

STATE OF MICHIGAN CONTRACT NO. 271N3200089

CITY OF FLINT WATER SUPPLY ASSESSMENT

State of Michigan, Department of Treasury

**Appendix A: Meeting Minutes**

## MEETING MINUTES

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**IN ATTENDANCE:** Sue McCormick, DWSD Director  
Darryl Latimer, DWSD Deputy Director  
George Karmo, TYJT  
Awni Qaqish, TYJT  
Dave Guastella, TYJT

**DATE:** November 24, 2012

**PURPOSE OF MEETING:** Meeting with DWSD for the Indefinite-scope, Indefinite-delivery Contract Number 00383, 2012 Professional General Architectural/Engineering Services – City of Flint Water Supply Assessment

**PREPARED BY:** Dave Guastella

A meeting was held at the DWSD Main Office Building on November 19, 2012 to discuss the water supply options being presented by DWSD to the City of Flint. The main items discussed generally followed the attached DWSD Discussion/Questions that were provided to the Department prior to the meeting. A summary of the key points discussed are provided below.

### DISCUSSION ITEMS

1. Question/Discussion Item: Verify that the four options presented at the November 1, 2012 meeting are still available for consideration:
  - a. Supplied from Potter & Baxter using the new model contract (assume a Maximum Day Customer),
  - b. Supplied from Imlay Station,
  - c. Finished un-pumped supply from Lake Huron WTP, and
  - d. Raw un-pumped supply from Lake Huron WTP.

*DWSD prefers to focus on the first two supply point listed; from the current location at Potter & Baxter and at the Imlay Pump Station as these apply specifically to Flint.*

*DWSD provided the attached summary regarding the current costs to Flint based on the various options that DWSD is offering. The savings associated with each option is provided as well. As example, if Flint were to purchase water from the supply point located at Imlay Station, the current cost to Flint would be \$5,661,000 and it would be a savings of nearly 50%*



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compared to Flint's current rate.

2. Question/Discussion Item: What additional capital improvements will be required for each option?

*If Imlay Pump Station is selected as the supply point then Flint would need to purchase the 72-inch water main and an agreement to supply Lapeer would need to be worked out. DWSD believes that this could be worked out through a "wheeling" charge over the 72-inch main or possibly moving the supply point downstream of the Lapeer connection.. DWSD estimates the value of the water main at \$4.7M. Flint could bond for this amount or DWSD could include the cost into Flint's rate.*

3. Question/Discussion Item: Are there other options being presented that should be considered (e.g., blending)?

*Only the two options indicated above are currently being considered and both would include blending; DWSD providing 2/3 of the supply and the Flint WTP providing the other 1/3.*

4. Question/Discussion Item: To evaluate each option over the 25 year planning period, provide:
- Annual water rate for Flint for 2002 through 2012, and the
  - Projected annual rate adjustment for each option. What are the proposed measures to keep the rate adjustments down in the future?

*DWSD provided the attached historical rates from 2002 through 2012 for the existing water contract with Flint. The attachment also includes what the rates would have been if Flint had signed the new model contract or had taken service from Imlay. These rates were provided back to 2010.*

*DWSD believes that 5% would be a good estimation to assume for their annual escalation in rates over the 25 year planning period.*

5. Question/Discussion Item: Flint stated a 10% increase in the capacity charge. What number did DWSD provide Flint?

*It was unclear to DWSD where the 10% increase in capacity charge stated by Flint came from. DWSD's information provided shows an average of 6.3%. DWSD offered a meeting with TYJT to discuss how the fixed and commodity charges are allocated.*

6. Question/Discussion Item: Flint financial comparison is based on the initial Cost of \$14,413,858, which includes \$2,725,538 for Flint WTP operating cost; i.e, DWSD charge is \$11,688,320. How good is this number?

*DWSD indicated that the charge of \$11,638,320 is good through 6/30/13.based on their existing contract with DWSD.*

7. Question/Discussion Item: KWA's initial charge to Flint is based on 12 MGD. Is DWSD charge

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based on 12 MGD?

*Yes, 12 MGD from DWSD would be a maximum with Flint supplying 6 MGD for a total of 18 MGD (2/3 vs. 1/3).*

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**Indefinite-scope, Indefinite-delivery Contract Number 00383  
2012 Professional General Architectural/Engineering Services**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

DWSD Discussion/Questions for the November 19, 2012 Meeting

1. Verify that the four options presented at the November 1, 2012 meeting are still available for consideration:
  - c. Supplied from Potter & Baxter using the new model contract (assume a Maximum Day Customer),
  - d. Supplied from Imlay Station,
  - e. Finished un-pumped supply from Lake Huron WTP, and
  - f. Raw un-pumped supply from Lake Huron WTP.
2. What additional capital improvements will be required for each option?
3. Are there other options being presented that should be considered (e.g., blending)?
4. To evaluate each option over the 25 year planning period, provide:
  - g. Annual water rate for Flint for 2002 through 2012, and the
  - h. Projected annual rate adjustment for each option. What are the proposed measures to keep the rate adjustments down in the future?
5. Flint stated a 10% increase in the capacity charge. What number did DWSD provide Flint?
6. Flint financial comparison is based on the initial Cost of \$14,413,858, which includes \$2,725,538 for Flint WTP operating cost, i.e DWSD charge is \$11,688,320. How good is this number?
7. KWA's initial charge to Flint is based on 12 MGD. Is DWSD charge based on 12 MGD?

Summary of DWSD Cost Allocations to Flint Under Various Scenarios

*Flint Only*

	Revenue	Rates and Charges		
	Requirement	Fixed	Commodity	Avg Unit Cost
1 Status Quo	11,461,700	357,271	12.46	19.91
2 Model Contract	9,732,100	275,517	11.16	16.90
3 Change	(1,729,600)	(81,754)	(1.30)	(3.00)
4 % Change	-15.1%	-22.9%	-10.4%	-15.1%
5 Max Day Only	9,424,700	271,010	10.72	16.37
6 Change	(307,400)	(4,507)	(0.44)	(0.53)
7 % Change	-3.3%	-1.7%	-4.1%	-3.3%
8 Allow Blending	6,302,800	182,369	10.72	16.42
9 Change	(3,121,900)	(88,641)	0.00	0.05
10 % Change	-49.5%	-48.6%	0.0%	0.3%
11 Inlay City Connections	5,800,700	170,912	9.77	15.11
12 Change	(502,100)	(11,457)	(0.95)	(1.31)
13 % Change	-8.7%	-6.7%	-9.7%	-8.7%
14 Cumulative Change	(5,661,000)	(186,359)	(2.69)	(4.80)
15 Cumulative %Change	-49.4%	-52.2%	-21.6%	-24.1%

	Assumptions					
	Avg Day	Max Day	Peak Hour	Distance	Elevation	Sales
	<i>mgd</i>	<i>mgd</i>	<i>mgd</i>	<i>miles</i>	<i>feet</i>	<i>mgd</i>
1 Status Quo	11.8	21.6	22.6	52.0	866	11.8
2 Model Contract	11.8	17.9	18.8	52.0	866	11.8
3 Max Day Only	11.8	17.9	17.9	52.0	866	11.8
4 Allow Blending	7.9	11.9	11.9	52.0	866	7.9
5 Inlay City Connections	7.9	11.9	11.9	45.2	866	7.9

## Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<i>Hypothetical Model Contract</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		13.96	13.96			6.8%	
2011	145,918	13.74	15.28		-1.6%	9.5%	
2012	378,968	12.58	16.57	159.7%	-8.4%	8.4%	
2013	597,323	11.63	17.93	57.6%	-7.6%	8.2%	5.5%

TFG

## Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<i>Hypothetical Model Contract - Flint Only</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		11.73	11.73			-10.3%	
2011	70,060	12.45	13.89		6.1%	18.4%	
2012	175,882	11.47	15.08	151.0%	-7.9%	8.6%	
2013	272,923	10.65	16.24	55.2%	-7.1%	7.7%	4.4%

TFG

# Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%

## *Hypothetical Model Contract - Flint Only @ Imlay*

2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		11.16	11.16			-14.6%	
2011	65,919	10.88	12.23		-2.5%	9.6%	
2012	165,275	9.89	13.28	150.7%	-9.1%	8.6%	
2013	255,580	9.09	14.32	54.6%	-8.1%	7.8%	2.9%

TFG

## MEETING MINUTES

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**IN ATTENDANCE:** Ed Kurtz; Flint Emergency Financial Manager, City of Flint  
Dayne Walling; Mayor, City of Flint  
Mike Brown, City of Flint  
John O'Brien, Genesee County  
Howard Croft, City of Flint  
Dwayne "Duffy" Johnson, City of Flint  
Brent Wright, City of Flint  
Awni Qaqish, TYJT  
Dave Guastella, TYJT

**DATE:** November 24, 2012

**PURPOSE OF MEETING:** Meeting with the City of Flint for the Indefinite-scope, Indefinite-delivery Contract Number 00383, 2012 Professional General Architectural/Engineering Services – City of Flint Water Supply Assessment

**PREPARED BY:** Dave Guastella

A meeting was held at the City of Flint Municipal Center on November 20, 2012 to discuss the water supply option being presented by the Karegnondi Water Authority (KWA) to the City of Flint. The main items discussed generally followed the attached KWA Discussion/Questions that were provided to City prior to the meeting. A summary of the key points discussed are provided below.

The questions submitted are repeated in the Discussion Items for easy reference. A summary of the action items generated from the meeting follow the Discussion Items.

### DISCUSSION ITEMS

1. Question/Discussion Item: Is the maximum day demand of 18 MGD for Flint the maximum day demand (MDD) throughout the 25 year planning period? If not, what is the 25 year projected MDD?

*KWA would supply up to 18 MGD. 18 MGD has been assumed as the maximum day demand and 12 MGD is assumed as the average day demand throughout the 25 year planning period.*

2. Question/Discussion Item: Copy of the intake contract documents and engineer's estimate.

The intake contract documents are approximately 90% complete and are not available for distribution. However, the updated Appendix 20, dated October 4, 2012 includes the most recent cost estimate of the intake based on the current design in process.

Comments: Meeting minutes were recorded based on the understanding of the author. Please contact the author within three days if you have any different understanding of the meeting. These minutes will be considered approved unless comments are provided within three days.



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3. Question/Discussion Item: Documentation of the Flint WTP improvements required and cost estimate.

*The costs are approximately \$7M as presented in the September 2009 Preliminary Engineering Report. However, this estimate has been updated. Some processes have been eliminated. John O'Brien will provide the updated costs and the description of the planned improvements to the plant.*

4. Question/Discussion Item: Confirm Flint's allocated percentage of the KWA capital improvements (30%?).

*Yes, the allocation is based on 18 MGD/60 MGD total capacity.*

5. Question/Discussion Item: Copy of the proposed KWA operating agreement for Flint.

*John O'Brien will provide the operating agreement as well as the Capacity Contract and Articles of Incorporation.*

6. Question/Discussion Item: What is the annual operating agreement adjustment projected for the 25 year planning period?

*This information is provided in Appendix 14, Table 14.2 of the September 2009 Preliminary Engineering Report. Operating cost based on Table 1. Used 12 MGD as average day demand (ADD). Assumed 5% as the annual increase in operating costs. John O'Brien indicated that these operating costs were based on Genesee County's operating costs. John O'Brien will provide the last 10 years of audited financial statements for the water fund.*

*To assess operating and maintenance costs for the Flint WTP, Duffy will provide multiple years of financial statements for the water fund. Duffy did not believe they had 10 years, but they will provide what they have.*

*Regarding operation and maintenance costs, Flint believes that these costs will increase by 2/3 of what they are now.*

7. Question/Discussion Item: Need the route of the pipelines and the locations of the facilities proposed. Purpose is to identify constraints that impact costs (i.e., utilities, environmental (e.g. wetlands), easements, etc.).

*KWA will not release the route due to concerns regarding speculation of land and easements. John O'Brien did indicate that the Lake Huron pump station would be at Fisher and M-25. The intermediate pump station site is near a location of the Lapeer/Sanilac/St. Clair border; where all three meet.*

8. Question/Discussion Item: KWA's initial charge to Flint is based on a 12 MGD average day demand. What is the basis of this number? Are there population projections and water use figures available that were used to determine the Flint demand for the 25 year planning period?

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*This was answered in Question No. 1 above.*

9. Question/Discussion Item: Is there a transition plan and cost during construction of the KWA system identified?

*Flint is looking for an agreement with DWSD for back-up supply from the 72-inch main at the Genesee border.*

10. Question/Discussion Item: The October 4, 2012 Preliminary Engineering Report Update states: "no backup power is planned for the pumps" (LHPS) and "No backup power is planned for pumping" (IPS). In case of power loss, how would Flint supply its customers?

*Flint indicated that they have adequate storage to supply the system for 6 to 7 days. Flint has 55 MG of storage and Genesee County has 65 MG for 2.5 days.*

11. Question/Discussion Item: The latest plan shows only a 5 million gallon ground reservoir is planned for balancing between LHPS and IPS. How is redundancy maintained?

*In cases of emergency, Flint indicated that the back-up for the KWA system will be the same as it is now with DWSD; they will use the Flint River as the source water. Flint currently operates their plant four times a year.*

*When questioned as to whether the WTP will be able to treat both lake water from the KWA system and river water Flint indicated that once the improvements identified in the September 2009 Preliminary Engineering Report are completed they will be able to accomplish both treatment processes. Flint will provide a schematic of the treatment trains at the WTP and a copy of the Flint transmission system.*

*Genesee County indicated that additional redundancy would also be provided from the new Genesee County WTP.*

*Regarding hydraulic transients; Genesee County indicated that a model analysis has not been included, but capital costs for mitigating transients have been included.*

12. Question/Discussion Item: Related to the construction cost:

- a. Does it include an additional traffic lane since the construction will occupy half the right of way? *Not required, all roads are county roads; however, there are a few State road crossings.*
- b. Does it include costs/fees for permit requirements such as inspection cost by the jurisdictional authorities? As a point of reference, the permit fee costs for the Flint Transmission System came out to be \$5.8 million. *Not required; all of the counties have waived any fees.*
- c. Does the cost of the steel pipe segments include corrosion protection measures such as

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anode stations and related O&M? Yes; however, the KWA has not settled on using steel pipe. PCCP pipe may be used. Steel shown in estimate because it is highest in cost and therefore the pricing is conservative.

d. SCADA monitoring stations require power. Is the cost of bring power to the SCADA stations included? Again, as a point of reference for the Flint Transmission System we estimated \$800,000 for power to SCADA and valve operators. Yes, Genesee County did emphasize that the SCADA system will be simple and straightforward because a lot of controls are not required.

e. Other items discussed at the meeting included:

- The 2009 plant improvement cost is still good; however, there will be some reduction, such as a sulfuric chloride feed system that was eliminated. Plant capacity now is 36MGD, but will be 18 MGD.
- The KWA Lake Huron Pumping Station (LHPS) is now only high lift pump station.
- Genesee County will provide the distance of the intake pipe from the crib to the LHPS.
- The intake project is almost ready to bid; waiting for the COE permit.
- Genesee County is estimating the construction for the pipe lines and pump stations will begin July 2013.
- The route has been flown for survey.
- Genesee County is estimating construction will be complete and the project will be placed in service by Jan 2016.
- Genesee County to provide a list of assumptions that the \$272 million cost estimate is based on since the route is now known.

13. The Flint River is identified as a backup: At what capacity? MDD or emergency supply?

*The Flint River would serve as a back up supply.*

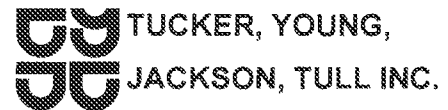
14. Where did the 40 years come from (Flint hostage to Detroit)? DWSD's new contracts are 30 years with openers to revise terms of supply (volume and pressure) after the first two years, then three years, and then in five year increments thereafter.

*The 40 years was stated in error. The reference was to DWSD's requirement to sign a 30 year contract.*

*After 40 years Flint will own 30% of the project and can sell their share of ownership if they want. Conversely, with DWSD, they continue to pay for the capital projects but have no ownership. Flint believes they will know what they will be charged for the next 25 years versus DWSD that can't commit to a fixed escalation.*

Action Items for Follow-up		
Items:	Assigned To:	Date to Complete
1. Updated Costs for the Flint WTP Improvements and a description of the improvements.	John O'Brien	11/21/12
2. KWA Operating Agreement, Capacity Contract and Articles of Incorporation.	John O'Brien	11/20/12
3. Provide the last 10 years of audited financial statements for the Genesee water fund.	John O'Brien	11/20/12
4. Provide multiple years of financial statements for the City of Flint water fund.	Duffy Johnson	11/26/12
5. Provide schematic of the Flint WTP and a map of the Flint transmission system.	Brent Wright	11/26/12
6. Provide the length of the intake pipe from the crib to the pump station.	John O'Brien	11/20/12
7. Provide a list of assumptions that the \$272 million cost estimate is based on since the route is now known.	John O'Brien	11/26/12

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Detroit, Michigan 48226  
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**Indefinite-scope, Indefinite-delivery Contract Number 00383  
2012 Professional General Architectural/Engineering Services**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

KWA Discussion/Questions for the November 20, 2012 Meeting

1. Is the maximum day demand of 18 MGD for Flint the maximum day demand (MDD) throughout the 25 year planning period? If not, what is the 25 year projected MDD?
2. Copy of the intake contract documents and engineer's estimate.
3. Documentation of the Flint WTP improvements required and cost estimate.
4. Confirm Flint's allocated percentage of the KWA capital improvements (30%?).
5. Copy of the proposed KWA operating agreement for Flint.
6. What is the annual operating agreement adjustment projected for the 25 year planning period?
7. Need the route of the pipelines and the locations of the facilities proposed. Purpose is to identify constraints that impact costs (i.e., utilities, environmental (e.g. wetlands), easements, etc.).
8. KWA's initial charge to Flint is based on a 12 MGD maximum day demand. What is the basis of this number? Are there population projections and water use figures available that were used to determine the Flint demand for the 25 year planning period?
9. Is there a transition plan and cost during construction of the KWA system identified?
10. The October 4, 2012 Preliminary Engineering Report Update states: "no backup power is planned for the pumps" (LHPS) and "No backup power is planned for pumping" (IPS). In case of power loss, how would Flint supply its customers?
11. The latest plan shows only a 5 million gallon ground reservoir is planned for balancing between LHPS and IPS. How is redundancy maintained?
12. Related to the construction cost:
  - a. Does it include an additional traffic lane since the construction will occupy half the right of way?
  - b. Does it include costs/fees for permit requirements such as inspection cost by the jurisdictional authorities? As a point of reference, the permit fee costs for the Flint Transmission System came out to be \$5.8 million.

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- 
- c. Does the cost of the steel pipe segments include corrosion protection measures such as anode stations and related O&M?
  - d. SCADA monitoring stations require power. Is the cost of bring power to the SCADA stations included? Again, as a point of reference the for the Flint Transmission System we estimated \$800,000 for power to SCADA and valve operators.
13. The Flint River is identified as a backup: At what capacity? MDD or emergency supply?
14. Where did the 40 years come from (Flint hostage to Detroit)? DWSD's new contracts are 30 years with openers to revise terms of supply (volume and pressure) after the first two years, then three years, and then in five year increments thereafter.

STATE OF MICHIGAN CONTRACT NO. 271N3200089

CITY OF FLINT WATER SUPPLY ASSESSMENT

State of Michigan, Department of Treasury

**Appendix B: Cost Worksheets**

# DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contract at P

## Capacity

Flint ADD: 0.60 MGD 81 MCF/Day  
 DWSD ADD: 12 MGD 1,604 MCF/Day

## Annual Volume

Flint: 29,412 MCF  
 DWSD: 585,561 MCF

## 2013 Cost of Supply

Flint WTP O&M: 120.30 /MCF \$ 3,538,214 /Yr  
 DWSD: \$ 16.37 /MCF \$ 9,585,642 /Yr

## Escalation/Inflation Rate

Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

## Capital Expenditure

Amount: \$ -  
 Reserve: \$ - 0% Reserve Rate: 0.00%  
 Amount plus Reserve: \$ -  
 Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$0

Year	Flint WTP
2013	\$ 3,53
2014	\$ 3,69
2015	\$ 3,86
2016	\$ 4,03
2017	\$ 4,22
2018	\$ 4,41
2019	\$ 4,61
2020	\$ 4,81
2021	\$ 5,03
2022	\$ 5,26
2023	\$ 5,49
2024	\$ 5,74
2025	\$ 6,00
2026	\$ 6,27
2027	\$ 6,56
2028	\$ 6,85
2029	\$ 7,16
2030	\$ 7,48
2031	\$ 7,82
2032	\$ 8,18
2033	\$ 8,54
2034	\$ 8,93
2035	\$ 9,33
2036	\$ 9,75
2037	\$ 10,19
2038	\$ 10,65
2039	\$ 11,14
2040	\$ 11,64
2041	\$ 12,16
2042	\$ 12,71

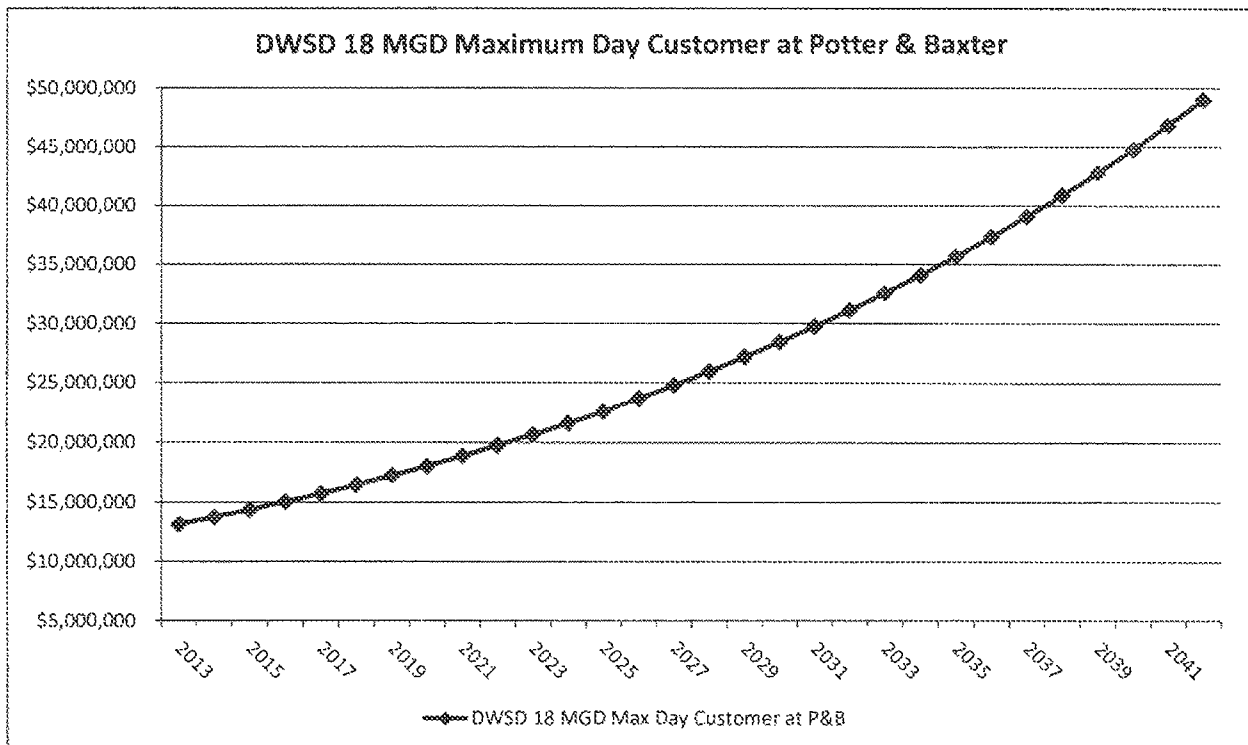
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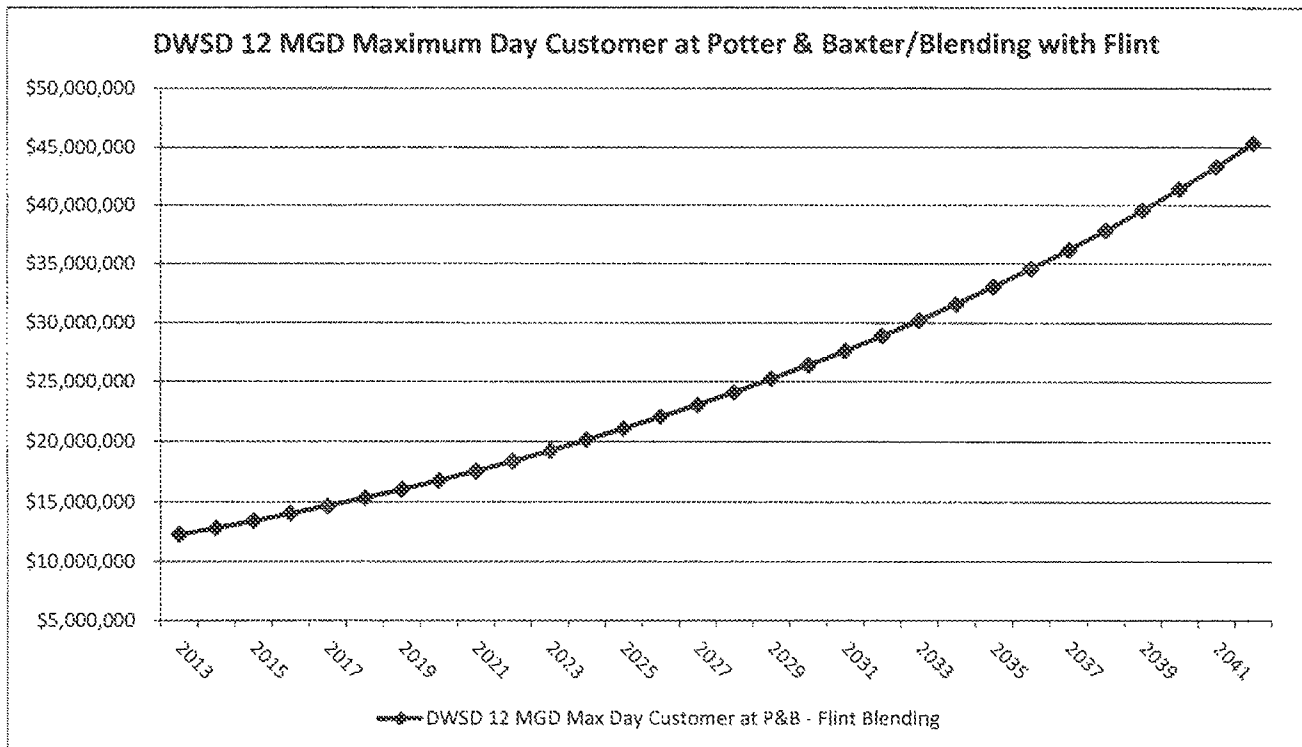
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# DWSD Worksheet : 12 MGD Maximum Day Customer with Model Contract at Potter & B

Capacity					Year	Flir	
Flint ADD:	4 MGD	535 MCF/Day		1	2013	\$ 5	
DWSD ADD:	8 MGD	1,070 MCF/Day		2	2014	\$ 6	
				3	2015	\$ 6	
Annual Volume					4	2016	\$ 6
Flint:	195,187 MCF	195187.1658		5	2017	\$ 7	
DWSD:	390,374 MCF			6	2018	\$ 7	
		5895097.471		7	2019	\$ 7	
2013 Cost of Supply					8	2020	\$ 8
Flint WTP O&M: \$	30.20 /MCF	\$ 5,895,097 /Yr		9	2021	\$ 8	
DWSD: \$	16.31 /MCF	\$ 6,367,005 /Yr		10	2022	\$ 8	
				11	2023	\$ 9	
				12	2024	\$ 9	
Escalation/Inflation Rate					13	2025	\$ 10
Flint:	4.51% /Yr			14	2026	\$ 10	
DWSD:	4.7% /Yr			15	2027	\$ 10	
				16	2028	\$ 11	
				17	2029	\$ 11	
Capital Expenditure					18	2030	\$ 12
Amount: \$	-			19	2031	\$ 13	
Reserve: \$	-	0% Reserve Rate: 0.00%		20	2032	\$ 13	
Amount plus Reserve: \$	-			21	2033	\$ 14	
Revenue Bond Rate:	5%			22	2034	\$ 14	
Number of Years:	25			23	2035	\$ 15	
Annual Cost:	\$0			24	2036	\$ 16	
				25	2037	\$ 16	
					2038	\$ 17	
DWSD 12 MGD Maximum Day Customer at Potter & Baxter/Blending with Flint						2039	\$ 18
						2040	\$ 19
						2041	\$ 20
						2042	\$ 21

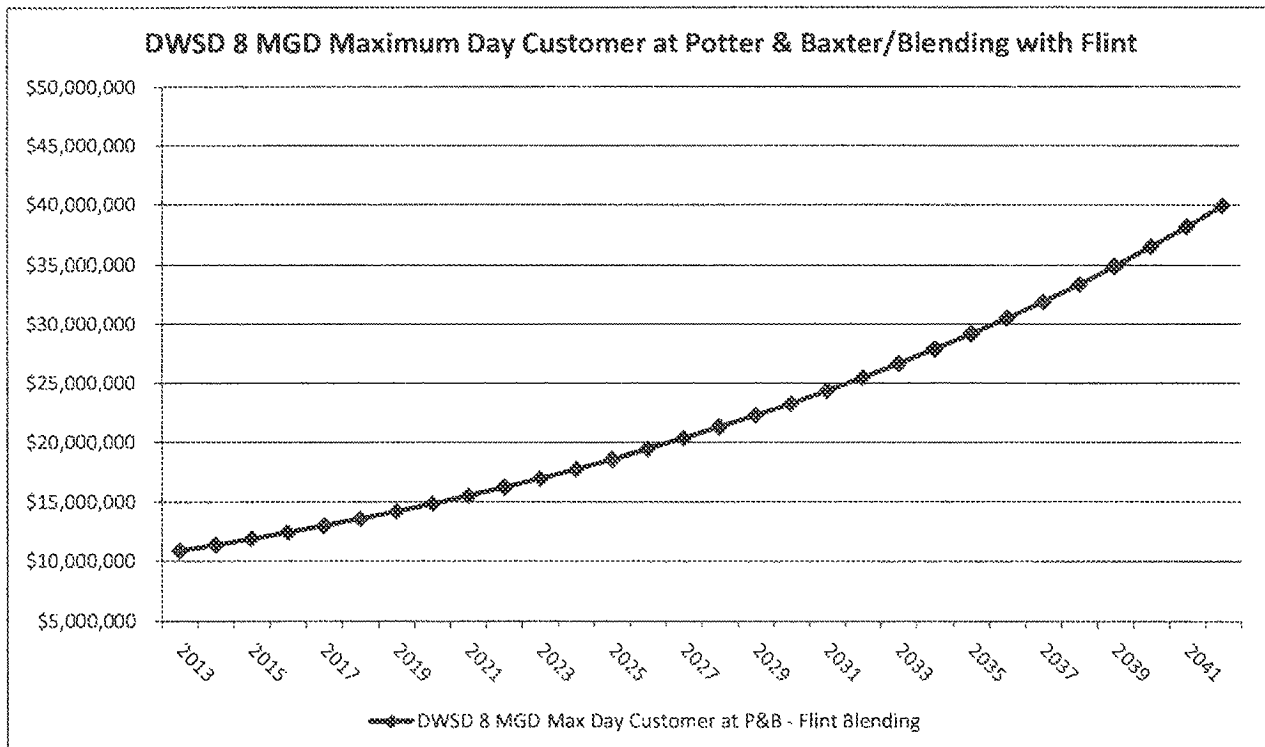


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# DWSD Worksheet : 8 MGD Maximum Day Customer with Model Contract at Potter & Ba

<u>Capacity</u>				Year	Flint V O&I
Flint ADD:	4 MGD	535 MCF/Day	1	2013	\$ 5,89
DWSD ADD:	8 MGD	1,070 MCF/Day	2	2014	\$ 6,16
			3	2015	\$ 6,43
<u>Annual Volume</u>			4	2016	\$ 6,72
Flint:	195,187 MCF		5	2017	\$ 7,03
DWSD:	390,374 MCF		6	2018	\$ 7,34
			7	2019	\$ 7,68
<u>2013 Cost of Supply</u>			8	2020	\$ 8,02
Flint WTP O&M: \$	30.20 /MCF	\$ 5,895,097 /Yr	9	2021	\$ 8,38
DWSD: \$	12.68 /MCF	\$ 4,949,947 /Yr	10	2022	\$ 8,76
			11	2023	\$ 9,16
			12	2024	\$ 9,57
<u>Escalation/Inflation Rate</u>			13	2025	\$ 10,00
Flint:	4.51% /Yr		14	2026	\$ 10,46
DWSD:	4.7% /Yr		15	2027	\$ 10,93
			16	2028	\$ 11,42
			17	2029	\$ 11,94
<u>Capital Expenditure</u>			18	2030	\$ 12,47
Amount: \$	-		19	2031	\$ 13,04
Reserve: \$	-	0% Reserve Rate: 0.00%	20	2032	\$ 13,62
Amount plus Reserve: \$	-		21	2033	\$ 14,24
Revenue Bond Rate:	5%		22	2034	\$ 14,88
Number of Years:	25		23	2035	\$ 15,55
Annual Cost:	\$0		24	2036	\$ 16,26
			25	2037	\$ 16,99
				2038	\$ 17,75
<b>DWSD 8 MGD Maximum Day Customer at Potter &amp; Baxter/Blending with Flint</b>				2039	\$ 18,56
				2040	\$ 19,39
				2041	\$ 20,27
				2042	\$ 21,18
				2043	\$ 22,06



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# DWSD Worksheet : 12 MGD Maximum Day Customer with Model Contract at Imlay/

## Capacity

Flint ADD: 4 MGD 535 MCF/Day  
 DWSD ADD: 8 MGD 1,070 MCF/Day

## Annual Volume

Flint: 195,187 MCF  
 DWSD: 390,374 MCF

## 2013 Cost of Supply

Flint WTP O&M: \$ 30.20 /MCF \$ 5,895,097 /Yr  
 DWSD: \$ 14.38 /MCF \$ 5,613,583 /Yr

## Escalation/Inflation Rate

Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

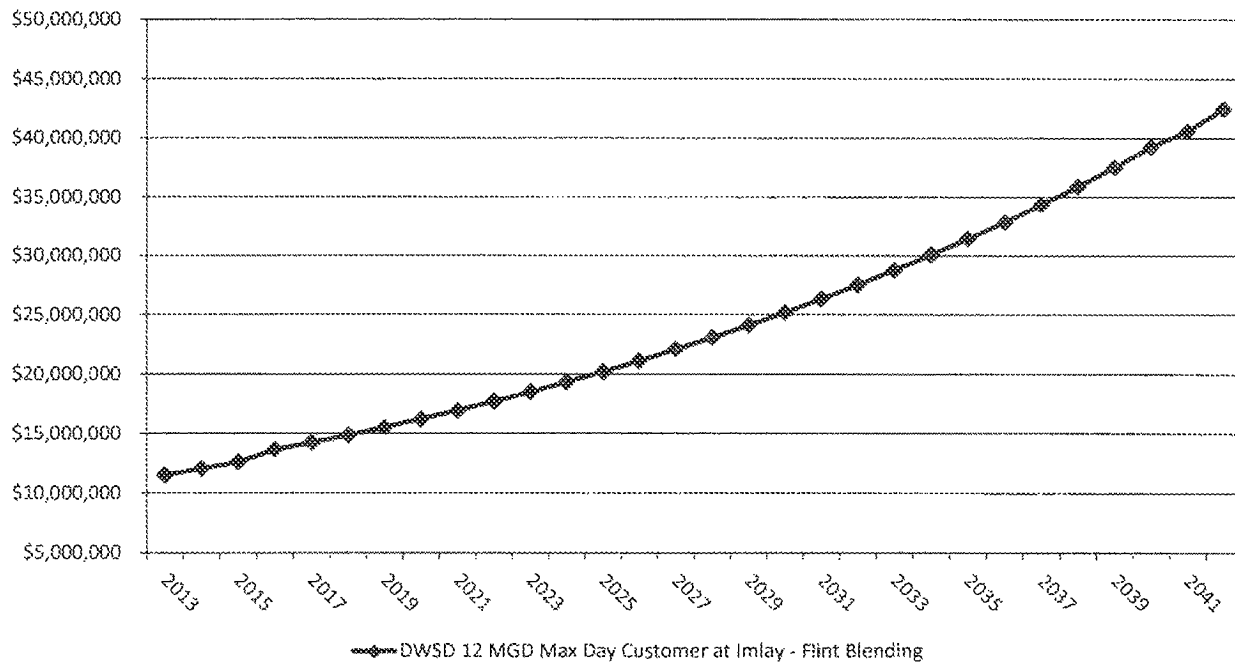
## Capital Expenditure

Capital: \$ 4,700,000  
 Bond Issuance (3% of Total): 195,000 Check: 3.0%  
 3 Years of Capitalized Interest: 975,000 Check: 5.0% /Yr (Bond Interest on Total)  
 Reserve (10% of Total): 650,000 Check: 10.0%  
 Total: \$ 6,520,000

Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$462,610  
 Interest on Reserve: 3%

Year	Flint O&M
2013	\$ 5,8
2014	\$ 6,1
2015	\$ 6,4
2016	\$ 6,7
2017	\$ 7,0
2018	\$ 7,3
2019	\$ 7,6
2020	\$ 8,0
2021	\$ 8,3
2022	\$ 8,7
2023	\$ 9,1
2024	\$ 9,5
2025	\$ 10,0
2026	\$ 10,4
2027	\$ 10,9
2028	\$ 11,4
2029	\$ 11,9
2030	\$ 12,4
2031	\$ 13,0
2032	\$ 13,6
2033	\$ 14,2
2034	\$ 14,8
2035	\$ 15,5
2036	\$ 16,2
2037	\$ 16,9
2038	\$ 17,7
2039	\$ 18,5
2040	\$ 19,3
2041	\$ 20,2
2042	\$ 21,1

DWSD 12 MGD Maximum Day Customer at Imlay/Blending with Flint



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# DWSD Worksheet : 8 MGD Maximum Day Customer with Model Contract at Imlay/B

Capacity								Flint W	
								Year	O&N
Flint ADD:		4	MGD	535	MCF/Day	1	2013	\$	5,895
DWSD ADD:		8	MGD	1,070	MCF/Day	2	2014	\$	6,160
						3	2015	\$	6,438
						4	2016	\$	6,725
						5	2017	\$	7,032
						6	2018	\$	7,349
						7	2019	\$	7,681
						8	2020	\$	8,027
						9	2021	\$	8,385
						10	2022	\$	8,758
						11	2023	\$	9,163
						12	2024	\$	9,576
						13	2025	\$	10,008
						14	2026	\$	10,450
						15	2027	\$	10,932
						16	2028	\$	11,425
						17	2029	\$	11,940
						18	2030	\$	12,478
						19	2031	\$	13,041
						20	2032	\$	13,625
						21	2033	\$	14,244
						22	2034	\$	14,886
						23	2035	\$	15,558
						24	2036	\$	16,260
						25	2037	\$	16,993
							2038	\$	17,755
							2039	\$	18,560
							2040	\$	19,397
							2041	\$	20,272
							2042	\$	21,186

## Annual Volume

Flint:	195,187	MCF
DWSD:	390,374	MCF

## 2013 Cost of Supply

Flint WTP O&M: \$	30.20	/MCF	\$	5,895,097	/Yr
DWSD: \$	11.11	/MCF	\$	4,337,059	/Yr

## Escalation/Inflation Rate

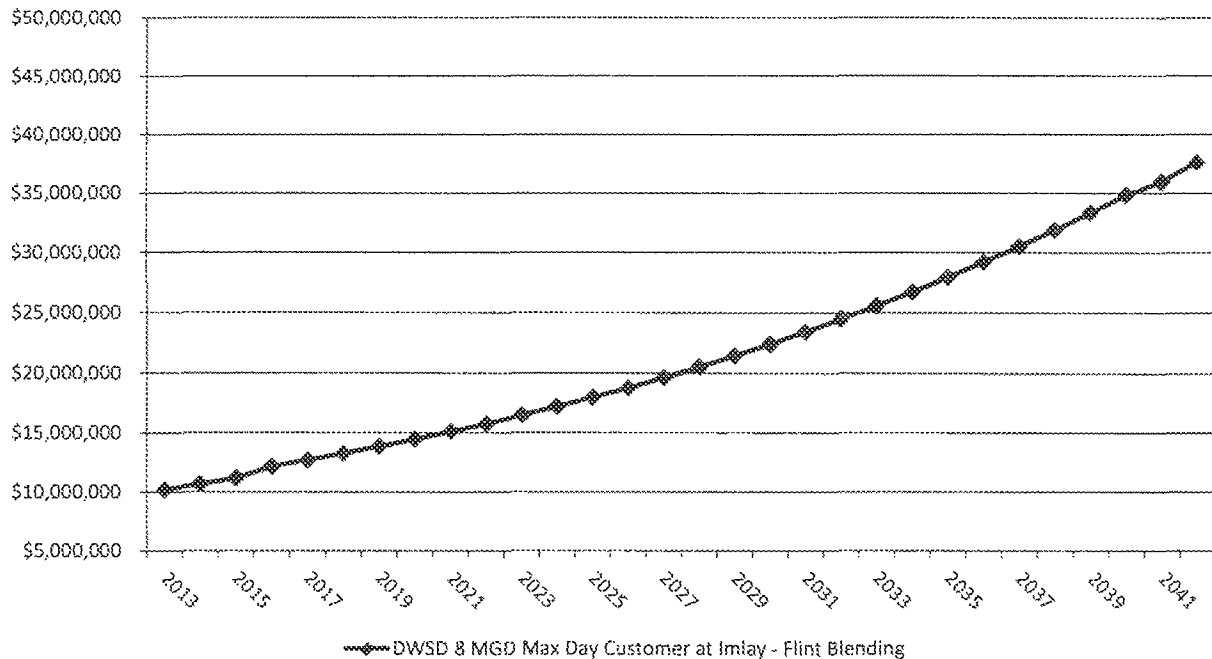
Flint:	4.51%	/Yr
DWSD:	4.7%	/Yr

## Capital Expenditure

Capital:	\$	4,700,000		
Bond Issuance (3% of Total):	195,000	Check:	3.0%	
3 Years of Capitalized Interest:	975,000	Check:	5.0% /Yr (Bond Interest on Total)	
Reserve (10% of Total):	650,000	Check:	10.0%	
Total:	\$	6,520,000		

Revenue Bond Rate:	5%
Number of Years:	25
Annual Cost:	\$462,610
Interest on Reserve:	3%

DWSD 8 MGD Maximum Day Customer at Imlay/Blending with Flint



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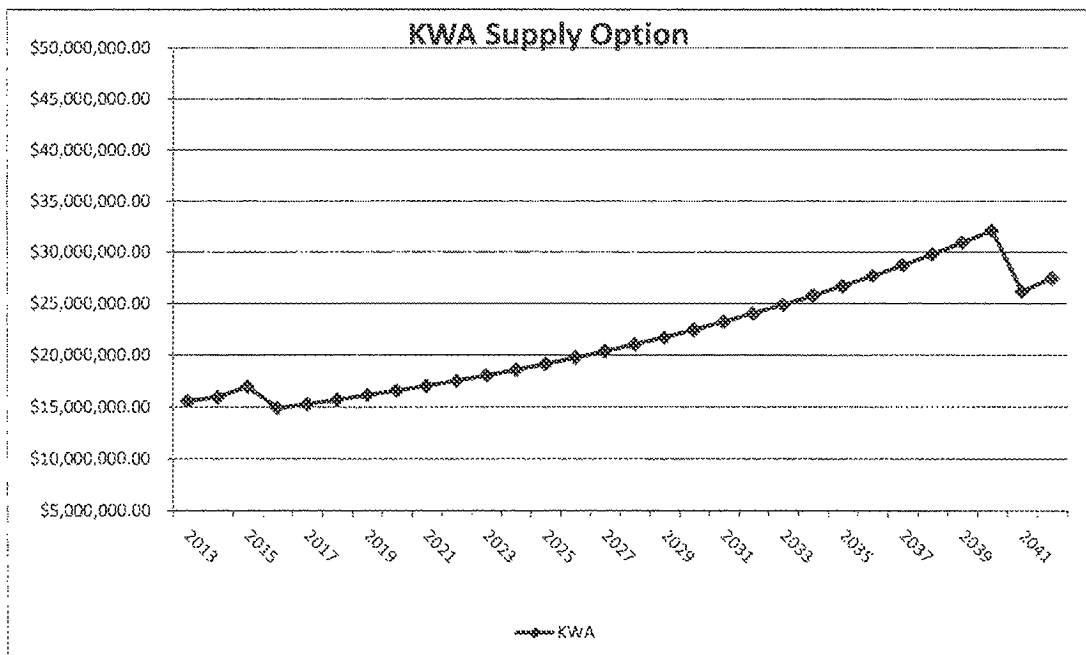
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**KWA Supply Option Worksheet**  
KWA 10/31/12 No Overruns

	Year	DWSD & Flint WTP Costs	KWA Entry Fee	KWA Debt service	Flint WTP Debt Service	KWA Operation s	Flint WTP Operations with KWA	TOTAL
1	2013	\$ 14,413,858	1,162,800					\$ 15,576,658
2	2014	\$ 15,355,135	581,400					\$ 15,936,535
3	2015	\$ 16,365,534	581,400					\$ 16,946,934
4	2016			6,593,155	572,781	878,869	6,843,344	\$ 14,888,149
5	2017			6,593,155	572,781	922,812	7,185,511	\$ 15,274,260
6	2018			6,593,155	572,781	968,953	7,544,787	\$ 15,679,676
7	2019			6,593,155	572,781	1,017,401	7,922,026	\$ 16,105,363
8	2020			6,593,155	572,781	1,068,271	8,318,127	\$ 16,552,334
9	2021			6,593,155	572,781	1,121,684	8,734,034	\$ 17,021,654
10	2022			6,593,155	572,781	1,177,769	9,170,735	\$ 17,514,440
11	2023			6,593,155	572,781	1,236,657	9,629,272	\$ 18,031,865
12	2024			6,593,155	572,781	1,298,490	10,110,736	\$ 18,575,162
13	2025			6,593,155	572,781	1,363,414	10,616,273	\$ 19,145,623
14	2026			6,593,155	572,781	1,431,585	11,147,086	\$ 19,744,607
15	2027			6,593,155	572,781	1,503,164	11,704,441	\$ 20,373,541
16	2028			6,593,155	572,781	1,578,322	12,289,663	\$ 21,033,921
17	2029			6,593,155	572,781	1,657,239	12,904,146	\$ 21,727,320
18	2030			6,593,155	572,781	1,740,101	13,549,353	\$ 22,455,390
19	2031			6,593,155	572,781	1,827,106	14,226,821	\$ 23,219,862
20	2032			6,593,155	572,781	1,918,461	14,938,162	\$ 24,022,559
21	2033			6,593,155	572,781	2,014,384	15,685,070	\$ 24,865,390
22	2034			6,593,155	572,781	2,115,103	16,469,323	\$ 25,750,362
23	2035			6,593,155	572,781	2,220,858	17,292,789	\$ 26,679,584
24	2036			6,593,155	572,781	2,331,901	18,157,429	\$ 27,655,266
25	2037			6,593,155	572,781	2,448,496	19,065,300	\$ 28,679,733
	2038			6,593,155	572,781	2,570,921	20,018,565	\$ 29,755,422
	2039			6,593,155	572,781	2,699,467	21,019,494	\$ 30,884,897
	2040			6,593,155	572,781	2,834,440	22,070,468	\$ 32,070,845
	2041					2,976,162	23,173,992	\$ 26,150,154
	2042					3,124,970	24,332,691	\$ 27,457,662

**25 Yrs Cumulative**  
\$ 503,456,186

**30 Yrs Cumulative**  
\$ 649,775,166



**KWA Supply Option Worksheet**  
KWA-1

**David Guastella:**  
Flint buys water from DWSO for three years during KWA construction at current rate (assume 5% increase each year)

**David**  
**Highlig**

Capacity								Flint WTP		Water Purchase	
Flint ADD:	12 MGD	1,604 MCF/Day		1	2013	\$ 3,538,214					
KWA ADD:	12 MGD	1,604 MCF/Day		2	2014	\$ 3,697,788					
				3	2015	\$ 3,864,558					
				4	2016	\$ 7,913,118					
				5	2017	\$ 8,270,000					
				6	2018	\$ 8,642,977					
				7	2019	\$ 9,032,775					
				8	2020	\$ 9,440,153					
				9	2021	\$ 9,865,904					
				10	2022	\$ 10,310,857					
				11	2023	\$ 10,775,876					
				12	2024	\$ 11,261,868					
				13	2025	\$ 11,769,779					
				14	2026	\$ 12,300,596					
				15	2027	\$ 12,855,352					
				16	2028	\$ 13,435,129					
				17	2029	\$ 14,041,053					
				18	2030	\$ 14,674,305					
				19	2031	\$ 15,336,116					
				20	2032	\$ 16,027,775					
				21	2033	\$ 16,750,627					
				22	2034	\$ 17,506,080					
				23	2035	\$ 18,295,605					
				24	2036	\$ 19,120,737					
				25	2037	\$ 19,983,082					
					2038	\$ 20,884,319					
					2039	\$ 21,826,201					
					2040	\$ 22,810,563					
					2041	\$ 23,839,320					
					2042	\$ 24,914,473					

Annual Volume

Flint: 585,561 MCF  
KWA: 585,561 MCF

2016 Cost of Supply

Flint WTP O&M: 13.51 /MCF \$ 7,913,118 /Yr  
KWA: \$ 1.50 /MCF \$ 878,869 /Yr

Escalation/Inflation Rate

Flint: 4.51% /Yr  
KWA: 5.0% /Yr

Capital Expenditure

Capital: \$ 272,421,558  
Bond Issuance (2.25% of Total): 8,440,000 Check: 2.25%  
3 Years of Capitalized Interest: 56,000,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 37,500,000 Check: 10.0%  
Total: \$ 374,361,558  
Flint's Share (30%) \$ 112,308,467

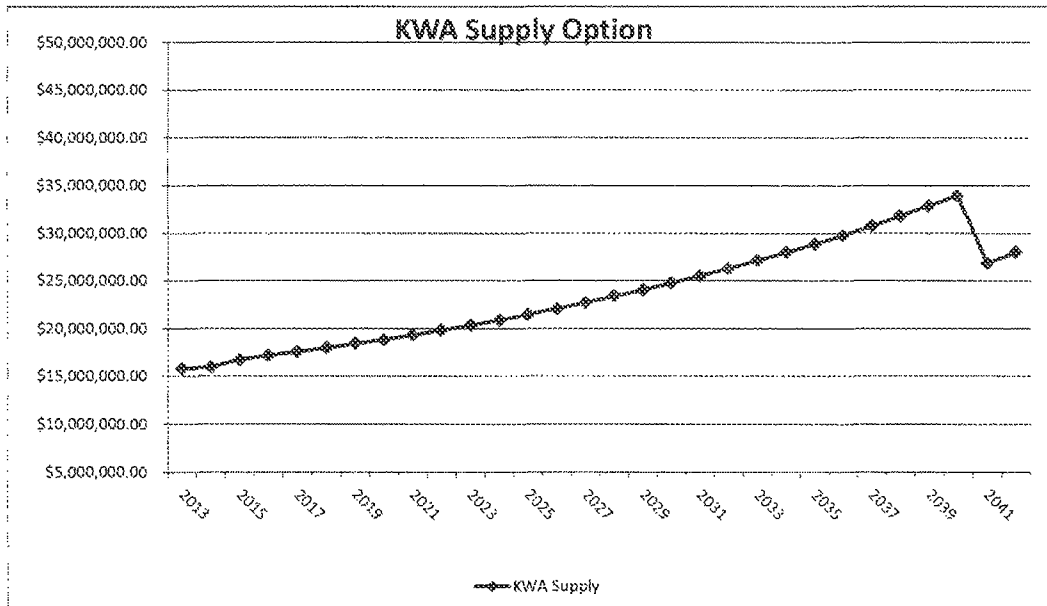
**David Guastella:**  
Assumes Bond Issuance and Reserve are not included

Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$7,968,562  
Interest on Reserve: 3%

**David Guastella:**  
Increased by 3%/Yr to 2012 \$'s

Capital: \$ 7,758,362  
Bond Issuance (3% of Total): 240,000 Check: 2.25%  
3 Years of Capitalized Interest: 1,800,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 1,070,000 Check: 10.0%  
Total: \$ 10,668,362

Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$756,946  
Interest on Reserve: 3%



**25 Yrs Cumulative**  
\$ 553,731,153

**30 Yrs Cumulative**  
\$ 707,279,715

**KWA Supply Option Worksheet**  
KWA-2

K  
P1

Capacity

Flint ADD: 12 MGD 1,604 MCF/Day  
KWA ADD: 12 MGD 1,604 MCF/Day

Annual Volume

Flint: 585,561 MCF  
KWA: 585,561 MCF

2016 Cost of Supply

Flint WTP O&M: \$ 13.51 /MCF \$ 7,913,118 /Yr  
KWA: \$ 1.50 /MCF \$ 878,869 /Yr

Escalation/Inflation Rate

Flint: 4.51% /Yr  
KWA: 5.0% /Yr

Capital Expenditure

Capital: \$ 357,578,060  
Bond Issuance (2.25% of Total): 11,050,000 Check: 2.25%  
3 Years of Capitalized Interest: 74,000,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 49,000,000 Check: 10.0%  
Total: \$ 491,628,060  
Flint's Share (30%) \$ 147,488,418

Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$10,464,666  
Interest on Reserve: 3%

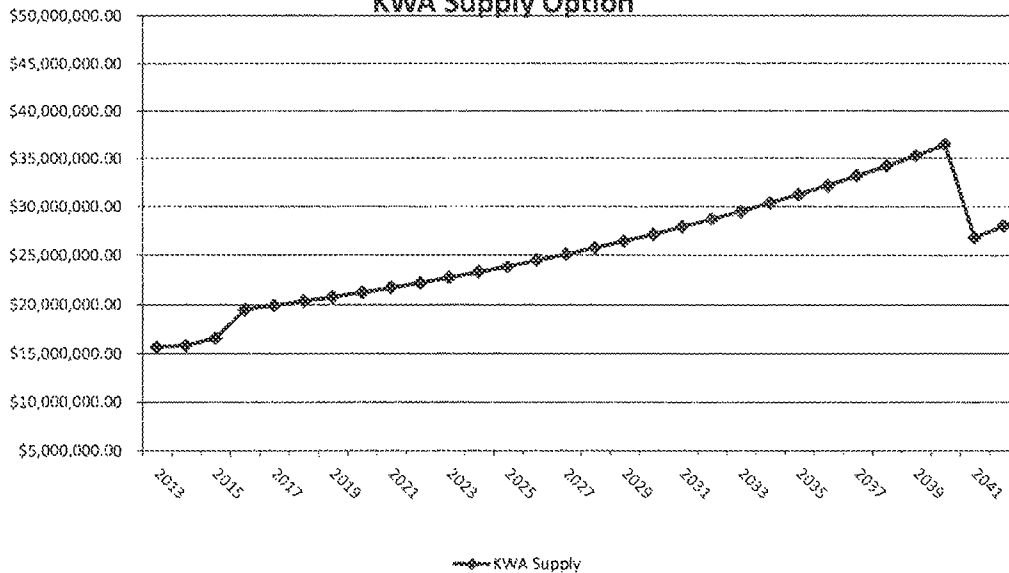
Capital: \$ 7,758,362  
Bond Issuance (3% of Total): 240,000 Check: 2.25%  
3 Years of Capitalized Interest: 1,600,000 Check: 5.0% /Yr (Bond Interest on Total)  
Reserve (10% of Total): 1,070,000 Check: 10.0%  
Total: \$ 10,568,362

Revenue Bond Rate: 5%  
Number of Years: 25  
Annual Cost: \$756,946  
Interest on Reserve: 3%

Flint WTP

Year	O&M	Water Purchase
2013	\$ 3,538,214	11,461,700
2014	\$ 3,697,788	12,034,785
2015	\$ 3,864,558	12,636,524
2016	\$ 7,913,118	878,869
2017	\$ 8,270,000	922,812
2018	\$ 8,642,977	968,953
2019	\$ 9,032,775	1,017,401
2020	\$ 9,440,153	1,068,271
2021	\$ 9,865,904	1,121,684
2022	\$ 10,310,857	1,177,769
2023	\$ 10,775,876	1,236,657
2024	\$ 11,261,868	1,298,490
2025	\$ 11,769,779	1,363,414
2026	\$ 12,300,596	1,431,585
2027	\$ 12,855,352	1,503,164
2028	\$ 13,435,129	1,578,322
2029	\$ 14,041,053	1,657,239
2030	\$ 14,674,305	1,740,101
2031	\$ 15,336,116	1,827,106
2032	\$ 16,027,775	1,918,461
2033	\$ 16,750,627	2,014,384
2034	\$ 17,506,080	2,115,103
2035	\$ 18,295,605	2,220,858
2036	\$ 19,120,737	2,331,901
2037	\$ 19,983,082	2,448,496
2038	\$ 20,884,319	2,570,921
2039	\$ 21,826,201	2,699,467
2040	\$ 22,810,563	2,834,440
2041	\$ 23,839,320	2,976,162
2042	\$ 24,914,473	3,124,970

**KWA Supply Option**



25 Yrs Cumulative

\$ 606,057,940

30 Yrs Cumulative

\$ 766,784,313

#### City of Flint Water Supply Assessment (TYJT, for Treasury)

DEQ-Drinking Water engineers are responsible for this review. WRD offers one comment however. The KWA pump stations are not supplied with a secondary power source. It would appear that we should ask if this meets "10 States" for drinking water facilities. If power is lost to the pump stations, the Flint WTP would have to be used to supply finished water (with Flint River as the raw source, apparently). It would seem that independent secondary power sources should be provided to the KWA pumping stations to more reliably ensure Lake Huron as the source water.

#### Potential Financial Impacts on the DWSD (Sewerage Fund):

It is difficult to quantify the potential financial impact of lost drinking water customers in Flint on the Sewerage Fund. Flint is supplied currently with DWSD drinking water but provides their own wastewater treatment. However, the following is offered:

- Some common functions in DWSD serve both Water and Sewerage. These include HR, purchasing, IT, legal, and top administration (including the Water Board). Further, under the proposed EMA organizational approach it appears that some services units would serve both water and sewer. It would follow that lost revenue to the Water Fund would have some incremental effect on the Sewerage Fund to make up for fixed costs.
- Lost revenue to the Water Fund would not translate to less outstanding water system debt. Would an increased level of water debt service to revenue result in a lower credit rating of an independent DWSD? The rating applies to DWSD as a whole. A lower rating would potentially increase costs to borrow on the sewerage side; for such items as CSO correction and WWTP improvements.
- Some have suggested that financial impact on residents consider both water rates and sewerage rates, combined. Although this is not what WRD currently does, should this type of assessment be presented in the future then lost revenue on the water side will increase costs to those remaining in DWSD (to cover the fixed costs). This could potentially increase the residential financial costs as a % of MHI for City residents, and thus further lengthen the time needed to completed non-core CSO corrections as described in the new permit.

#### Effects on NPDES Dischargers:

- 1) Which NPDES permits would be affected?  
Flint WWTP, Flushing WWTP, and Genesee Co-Ragnone WWTP are in the Flint River model/WLA, so all of these and no others are potentially affected (at least in this immediately d/s WLA).
- 2) Would we expect permit limits would be modified as a result of this proposal (and decreased background flows)?  
Since it appears the withdrawal would be near the head of or upstream of the modeled reaches, it would be assumed that all three facilities' limits would become more restrictive, depending on how we approach any load reductions to meet the DO std.
- 3) What would be the percent reduction in flow coming out of Holloway Reservoir?



A 1988 WRC 'ruling' requires that Holloway Reservoir release 85 cfs minimum in the summer, fall, and winter seasons. 232.4 cfs was used in spring modeling. 10 MGD = 15.5 cfs, so

15.5 cfs / 85 cfs = 18.2% reduction  
69.5 cfs would remain

The withdrawal is below Holloway Reservoir, so the flow out of the reservoir itself wouldn't have to change, but the flow at the first WLA facility (Flint WWTP) is reduced. Maybe the Holloway release flow could be increased 10 MGD. Erik believes that the 85 cfs minimum was to protect the fishery.



# ROWE PROFESSIONAL SERVICES COMPANY

*Large Firm Resources. Personal Attention.™*

January 7, 2013

Mr. Edward Kurtz, Emergency Financial Manager  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502

Subject: Review of December 21, 2012 Presentation – City of Flint Water Supply Assessment


Dear Mr. Kurtz:

As requested, we have reviewed the analysis of water supply alternatives for the City of Flint which was presented to the State Department of Treasury by Tucker, Young, Jackson, and Tull, Inc. (TYJT) on December 21, 2012. Our review is attached and summarizes the primary differences between the TYJT assessment and our previous studies and provides explanations of why we believe there are differences.

We have also reviewed the options for continued DWSD supply included in the TYJT presentation. It is not clear whether these are presented as specific offers on behalf of DWSD or included as examples for analysis, but we have noted some items which we believe should be addressed and considered as these options are compared.

If there are questions, please contact me.

Sincerely,  
ROWE Professional Services Company



James E. Redding, P.E.  
Vice President / Director of Engineering

Attachment

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**Review of TYJT December 21, 2012 Presentation**  
**City of Flint Water Supply Assessment**  
**Prepared by Rowe Professional Services Company**

**DWSD Supply (Slides 7 through 9)**

1. The 8 mgd maximum day supply by DWSD options can result in periods during the summer when most of the water to meet demands will be supplied by the City from the river. To aid in maintaining a consistent water quality, softening of the water from the river should be provided with this option, greatly increasing the City's costs.
2. Upgrades to Flint's WTP and dams will be needed for options requiring blending, since the WTP will be required to provide continuous, reliable service and compliance with recent surface water treatment regulations.
3. The rates for the options analyzed are shown on Slide 9 as "TYJT Estimates". Options and rates shown are different than presented by DWSD previously.

	DWSD 11/29/2012	TYJT Estimates
18 mgd Maximum Day - P&B	\$16.24	\$16.37
12 mgd Maximum Day - P&B	\$16.30	\$16.31
8 mgd Maximum Day -P&B		\$12.68
12 mgd Maximum Day - Imlay	\$14.38	\$14.38
8 mgd Maximum Day - Imlay		\$11.11

4. Since the rates used in the analyses are shown as estimates, are they actual offers or just presented as "what if" scenarios?
5. We assume that the Imlay options are based on transfer of the 72" main through Lapeer County to Flint. The analyses show a capital cost of \$4.7 million; we assume that this is the proposed purchase / lease cost to Flint. This should be clarified along with pertinent details.
6. If the transmission main is transferred to Flint, what are Flint's responsibilities regarding service to the Lapeer County customers? If they remain DWSD customers, then Flint should receive some revenue for the use the main. It does not appear this is included in the TYJT analyses.
7. If the transmission main is transferred to Flint, we assume that the city will be responsible for the maintenance of the 50 year old main. The TYJT analysis did not include this.
8. Do the rates shown include the credit for "reliability" which had been discussed with DWSD?
9. If the point of commerce is changed from Baxter and Potter to Imlay, a new meter pit will be required. The cost of this does not appear to be included in the TYJT cost analyses.

#### **Flint River Supply (Slide 10)**

1. If any of the "blending" options are chosen, it will be necessary to upgrade the Flint WTP and dams to provide reliable, continuous service and compliance with recent surface water treatment regulations.

#### **Data Collected (Slide 14)**

1. The slide notes that Flint blending is based on DWSD supplying 2/3 and Flint supplying 1/3 of 12 MGD ADD. For the maximum day demand (18 mgd), if DWSD supplies a maximum of 8 mgd, Flint will supply 10 mgd or 56% of the total. However, such a large portion will make it more difficult to blend and achieve consistent water quality. Flint will need to soften water for these options.

#### **Benchmarking Comparisons (Slide 16)**

1. The slide subtitles are "KWA O&M Inflation Factor" and "DWSD and Flint Rate Inflation Factor". It seems appropriate to benchmark O&M costs for the KWA, because future costs of service will be dependent on how operating costs are impacted by inflation. For Flint, it does not seem appropriate that "rate inflation" from other utilities be used to determine the impact of inflation on future cost of service. Rates are impacted by inflation, but also by other factors such as debt and customer base. O&M expenses and rates are different and care should be exercised not to mix the two during analyses. The TYJT analyses apply an inflation factor (based on rates from other utilities) to the Flint WTP operating expenses, which does not seem to be consistent.
2. The KWA will supply raw water; SOCWA and YUCA both supply finished water. Regulations impact the O&M for finished water suppliers but should not impact the KWA O&M. The use of data from SOCWA and YUCA does not seem like a comparable comparison with the KWA. Finished water suppliers will have increased costs due to regulatory compliance, which really are not due to "inflation" of the costs of wages, power, chemicals, etc.
3. DWSD has a history of rates to Flint and other suburban wholesale customers. Rates tend to be quite specific to each utility, based on much more than just the costs of operating and maintenance. It appears that DWSD historical rates have not been considered in projecting future DWSD rate increases.

#### **Capital Financing (Slide 17)**

1. KWA bonds are planned to be general obligation bonds, backed by member counties.

#### **O&M Inflation Factor (Slide 20)**

1. SOCWA and YUCA are finished water suppliers; ever-changing regulatory requirements will impact their operating costs more than a raw water supplier, such as KWA.
2. KWA will be a supplier of raw water. O&M costs should primarily be limited to power and labor, with a little chemical use for zebra mussel control. KWA will not provide treatment of the water.

3. The KWA study assumed power, labor, and chemical costs increase at an annual average of 3%. TYJT indicated this is too low and suggested 5%.
4. Following are examples of historical inflation, which support the 3% as a reasonable assumption for O&M expenses (not rates)
  - a. Labor- GCDC-WWS labor costs have increased at an annual average rate of 2.5% since 2003
  - b. Electricity Rates in Michigan (per U.S. Energy Information Administration) have increased an average of 3.2% since 1999.
  - c. The U.S. Bureau of Labor Statistics indicates that the inflation rate over the last 30 years has been an average of 2.8%.

#### **Finished Water Rate Inflation (Slide 21)**

1. TYJT bases their assumptions for rate inflation on a survey of rates from three other water suppliers, but ignored the actual rate history of DWSD. TYJT assumed DWSD rate increases of 4.4% annually (if water is purchased from P&B) and 2.9% annually (if water is purchased from Inlay). Based on the actual charges by DWSD to Flint, DWSD historical rates are as follows:
  - a. 10 year increase in DWSD rates to Flint: 10.5% annually
  - b. Average annual increase through 45 year history: 6.7%
2. Note that for the KWA analyses, an inflation factor has just been applied to power, labor, and chemicals. Although higher prices for labor, power, and chemicals impacts utility rates; rates are impacted by many other factors, many of which are not related to inflation. Rate inflation will likely be different than O&M inflation. Other factors impacting rates:
  - a. Debt – the amount of debt varies widely between utilities
  - b. Number of customers / quantity of water sold – there are many fixed expenses with a utility, that if are distributed amongst more users/more gallons sold will result in lower rates. Conversely, if there are fewer users or less water sold, the rates are higher. Assumptions regarding future water consumption will have a great impact on “rate inflation”.
3. Unlike KWA and Flint operating expenses which will increase over time based on inflation, the cost of continued DWSD service should be based on the inflation of DWSD rates, to include the increasing cost of other DWSD expenses such as debt and the impact of reduced customers / demands in addition to increasing O&M expenses.
4. Even though there could be a one-time reduction in DWSD rates through adopting the model contract, limiting peak demands, and or changing the point of commerce; it doesn't seem reasonable to assume that subsequent annual increases will only average 4.4% through the 30 year period of analysis. This is significantly less than historical performance (yet TYJT suggests that inflation for KWA O&M expenses will increase at almost double the rate of historical indicators).

### Capital Financing with Revenue Bonds (Slide 24)

1. Note that the KWA bonds will be general obligation bonds backed by the member counties.
2. The 2009 KWA Study assumed 6%, 25 year financing. The interest rate for planning was reduced in the 2012 Study update to 5%, which is still higher than if bonds were sold today.
3. Financial consultants determined the charges for purchasing capacity in the KWA supply based on the estimated project cost plus appropriate financing costs. Based on 60 units of capacity, \$538,764,000 will be generated for repayment of debt and project costs using the capacity charges in the KWA capacity agreement.  
$$\begin{array}{rcl} 25 \text{ years} * 60 \text{ units} * \$355,300 / \text{unit} & = & \$532,950,000 \\ 3 \text{ years} * 60 \text{ units} * \$32,300 / \text{unit} & = & \$ 5,814,000 \\ & & \hline & & \$538,764,000 \end{array}$$
4. For a KWA project cost of \$272,421,558, total P&I is \$483 million. The difference of \$55,500,000 is available for financing expenses (capitalized interest, bond issuance costs, etc.) and additional contingencies.
5. Bond holder reserve is not a requirement for general obligation bonds.
6. TYJT assumed that 3% interest would be earned on the bond holder reserve during the 25 year bond period. Current interest rates are less than 1% and it seems inappropriate to assume such a high rate will be earned on retained funds.
7. Bondholder reserve, if provided, should be applied against the last couple of P&I payments. The TYJT did not apply it. This will reduce their project costs.

### KWA Construction (Slides 26 through 29)

TYJT has indicated that the KWA construction cost estimate is too low. The primary differences in cost estimates for the project appear to be the following components:

1. Pump Stations (Slide 27) – The TYJT estimate for the pump stations is more than double that used by the KWA (\$54,573,314 vs. \$24,618,080). KWA estimates were based on actual construction costs from recent projects completed by Genesee County within the last eight years.
  - a. 32mgd water pump station including two-10 MG ground storage tanks – \$13.4 million
  - b. 80 mgd wastewater pump station, 50 feet deep wetwell – \$8.3 million
  - c. 30 mgd wastewater pump station, 50 feet deep wetwell – \$9.4 million

The KWA budgeted amount seems reasonable for two pumping stations as currently planned and to be constructed in rural areas (not southeast Michigan).

2. Redundant Power – There is no need for redundant power; other provisions will provide reliability of supply.
3. Land – Preliminary engineering has continued so earlier budgets established for planning for land acquisition can be greatly reduced. Options have been obtained on all properties which must be

purchased, so purchase prices are known. It will be necessary to obtain easements for only two miles of pipeline construction. All land costs are now estimated at \$1.25 million.

4. Engineering, Legal, Administration & Contingencies

- a. The October 2012 KWA estimate provided an allowance of 25% of construction cost to cover engineering, legal, administration, and contingencies (ELAC). This was reduced from the 38% allowance used in the 2009 Study because ongoing planning and design have firmed up many of the details of the project, including:
  - i. The intake design has been completed and all regulatory permits obtained.
  - ii. The transmission main route has been determined. Meetings with road agencies have firmed up the requirements for construction and restoration within rights-of-way. Environmental review and permitting are in process.

- b. TYJT costs for Intake Crib, Pump Stations, and Transmission Mains (Slide 30) include a 30% allowance for ELAC. These allowances (from Slides 26 through 28) total \$72,139,566. In addition, Slide 30 provides the following additional ELAC costs in the project total:

Design Engineering / Pump Stations	\$16,939,581
Construction Management	\$14,434,410
Administration	\$ 349,440
Legal	\$ 831,000
Total	\$32,554,431

- c. Combining this with the \$72,139,566 totals \$104,693,997 or 43% of the estimated construction cost. We believe that such a high allowance for ELAC is not appropriate for a project of this magnitude where preliminary engineering and some design have already been completed.

**Cost Comparison (Slide 30)**

1. The TYJT pump station price is too high based on costs of similar projects; costs used by KWA are based on costs of recent local projects. The KWA estimate is believed to be sufficient for the proposed pumping stations.
2. Redundant power is not required; this does not need to be included in the TYJT estimate.
3. Land for LHPS – actual price is \$360,000
4. Design Engineering / PS and Transmission – KWA included engineering in the 25% ELAC allowance included in the \$207,752,895 estimated cost of transmission mains; TYJT included engineering in their 30% ELAC allowance included in the \$218,811,559 estimated cost. By adding \$16,939,581 for design engineering, \$14,434,609 for construction administration, \$349,440 for administration, and \$831,000; it seems that ELAC is being “double-counted”. The TYJT 43% allowance for ELAC seems unwarranted for a project with a great deal of preliminary and design engineering completed. The 25% KWA allowance is believed to be sufficient.
5. Easements and land (other than LHPS) should total \$1,140,000, based on current options and specific needs for easements.

### **Other Considerations – Redundancy / Reliability (Slide 33)**

1. Unfunded Mandates/ Future Regulations
  - a. The proposed KWA supply will deliver raw water; it is not anticipated to be affected by future changes to regulations. Regulations will impact the City of Flint with respect to treatment and/or distribution of finished water. The City will be subject to these requirements with any of the DWSD blending options, just as they will be responsible for them if supplied by KWA. Some compliance costs may actually be less with the higher quality Lake Huron water rather than Flint River water as the source.
2. State Goals
  - a. The TYJT presentation indicates that creation of a new raw water supply is contrary to the governor's goals as suggested. However, the development of a new raw water supply provides new opportunities. Communities in Sanilac, St. Clair, and Lapeer counties will have the option to join a regional water supply and replace their small local supplies where limited supplies and high concentrations of arsenic have been a concern. The new water supply also provides great economic development opportunities. The raw water supplied by KWA will make a new commodity, raw water, available to the region. A large, low-cost supply of raw water can be a valuable resource for industries and agribusinesses. The development of a new water supply will also create construction jobs through the short term period of building the new water supply and subsequently over a longer period as new businesses and industries are developed in the area.
  - b. The City of Flint and area communities will benefit as permanent jobs are created for operating and maintaining the local treatment facilities.
3. Redundancy
  - a. We agree that the KWA and DWSD options are similar with respect to redundancy. Both provide the primary water supply; customers are responsible for their backup supply.

### **Other Considerations – Cost Slide 34**

1. TYJT indicates that the DWSD 8 mgd supply option is the least cost alternative.
  - a. The TYJT analysis does not include the cost of needed upgrades to the City's WTP or increased operating costs in their analysis. During summer months, water from the river will need to be softened before blending. More than half of the water supplied will be provided from the river. When the cost of upgrades to the WTP and the increased operating costs (for softening) are added to the TYJT analysis, the KWA option is less than the DWSD 8 mgd option.
2. For any of the DWSD "blending" options, upgrades will need to be made at the WTP to provide for continuous, reliable operation and compliance with new surface water treatment rules. Increased capital and operating costs for treating water from the river should be added to the TYJT costs for comparison with the other options.
3. Water from the river will require greater effort to treat than water from Lake Huron (more chemicals, power, and residuals). The TYJT analysis shows about the same O&M costs for the Flint WTP, regardless of water source. It seems that the WTP O&M costs for the KWA options should be reduced to reflect the savings from treating Lake Huron water.



4. The TYJT presentation noted that the KWA analysis did not include allowances for mechanical and process improvements within the planning period. The KWA will supply raw water. The facilities consist of pipe, pumps, and a tank. There are no treatment facilities which would be susceptible to future regulatory changes. The only improvements that seem likely would be the need to provide additional capacity. Capacity expansion is planned to be financed through capacity charges to new users.
5. The provision for redundant connections between the City's water system and the GCDC system was included in the most recent water supply agreement between the two, in 2011. Although not a KWA cost, the cost of the redundant connections should be considered with all options.
6. The \$2.3 million budgeted for land by KWA was intended to cover all land requirements. Since the October update, options have been obtained on all land to be purchased and the locations of easements needed has been finalized. Total land costs are now estimated to be about \$1.5 million.
7. The 2004 study included a 47% allowance for engineering, legal, administration, and contingencies (ELAC). The 2009 study reduced the allowance for ELAC to 37% because many of the details since the 2004 conceptual study had been better defined. For the October 2012 update, the allowance for ELAC was reduced to 25% because continued planning and preliminary engineering further addressed details from the earlier concepts.
  - a. The detailed design (plans and specifications) and permitting have been completed.
  - b. The transmission main route has been finalized. Meetings with road agencies have established requirements for construction and restoration within road rights-of-way. Environmental permitting is in process. The primary remaining unknown is pipe sizing, which is largely dependent on Flint's participation.

It is our experience that the 25% ELAC allowance is appropriate for a project of this magnitude at this stage in the planning / design stage. The 43% ELAC allowance recommended by TYJT is excessive for a project in the design phase.

8. Flint's WTP as a backup to the KWA will be less difficult to provide for than the current arrangement as a backup to DWSD. We believe there is potential for challenges with chemistry and treatment for the proposed DWSD blending options, too.
9. It doesn't seem that oversizing the KWA capacity is a good solution for the city's water loss problems, if that is what is being suggested.
10. Yes, it would be nice if the KWA system could be constructed to firmly determine its cost and time to complete before making a decision about water supply alternatives. However, a decision is needed regarding Flint's participation so that the sizing and design can be completed, before it can be built.

**Project Costs - TYJT Slides 26 through 30**

	KWA	TYJT
Intake and Crib		
Construction	\$22,076,850	\$22,076,850
ELAC	\$5,519,213	\$5,519,213
Property	\$2,300,000	\$2,300,000
 Pumping Stations		
Construction	\$24,618,080	\$54,573,314
Land		\$75,000
ELAC	\$6,154,520	\$16,394,494
 Transmission Mains		
Construction	\$166,202,316	\$167,419,530
ELAC	\$41,550,579	\$50,225,859
Easements		\$1,166,170
 Engineering		
Design Engineering		\$16,939,581
Construction Management		\$14,434,609
Administration		\$349,440
Legal / Easements / Contracts		\$831,000
Power	\$4,000,000	\$4,000,000
Redundant Power		\$1,273,200
 Total Construction	\$212,897,246	\$244,069,694
Total ELAC	\$53,224,312	\$104,694,196
Total Land / Property / Easements	\$2,300,000	\$3,541,170
Total Power	\$4,000,000	\$4,000,000
Total Redundant Power	\$0	\$1,273,200
 Total	\$272,421,558	\$357,578,260
 ELAC as % of Construction	25.0%	42.9%

Option	TYJT Total Cost	TYJT minus additional costs of river treatment	TYJT minus additional costs of river treatment plus redundant Flint-GCDC connections	TYJT minus additional costs of river treatment plus redundant connections less KWA reserve	TYJT minus additional costs of river treatment plus redundant connections less TYJT financing	TYJT plus Flint WTP
1 Flint WTP Only	\$590,441,893					
2 DWSD 8 MGD Max Day at Inlay	\$621,211,298					\$771,289,948
3 KWA 10/31/12 Update	\$649,775,166	\$534,615,996	\$554,555,960			
4 DWSD 8 MGD Max Day at P&B	\$657,167,877					\$807,246,527
5 KWA-1	\$707,279,715	\$592,120,545	\$612,060,509		\$572,731,459	
6 DWSD 12 MGD Max Day at Inlay	\$707,994,386					\$858,073,036
7 DWSD 12 MGD Max Day at P&B	\$742,168,081					\$892,246,731
8 KWA - 2	\$766,784,313	\$651,625,143	\$671,565,107	\$654,706,341		
9 DWSD 18 MGD Max Day at P&B	\$791,202,885					\$812,337,848

Option for Water Supply	TYJT Projected 30 Year Total Cost	30 Year O&M Reduction for Treating Lake Huron Water	25 Year Bond Cost for Redundant Connections	Eliminate KWA Reserve	Use KWA 25 Year Capital Charge \$355,300 / MGD	25 Year Bond Cost for Flint WTP Upgrades	Adjusted 30 Year Total Cost
1 Flint WTP Only	\$590,441,893		Included				\$590,441,893
2 DWSD 8 MGD Max Day at Inlay	\$621,211,298		Note 1			\$150,078,650	\$771,289,948
3 KWA 10/31/12 Update	\$649,775,166	-\$115,159,170	\$21,134,963				\$555,750,960
4 DWSD 8 MGD Max Day at P&B	\$657,167,877		Note 1			\$150,078,650	\$807,246,527
5 KWA-1	\$707,279,715	-\$115,159,170	\$21,134,963		-\$39,329,050		\$573,926,459
6 DWSD 12 MGD Max Day at Inlay	\$707,994,386		Note 1			\$150,078,650	\$858,073,036
7 DWSD 12 MGD Max Day at P&B	\$742,168,081		Note 1			\$150,078,650	\$892,246,731
8 KWA - 2	\$766,784,313	-\$115,159,170	\$21,134,963	-\$16,858,766			\$655,901,341
9 DWSD 18 MGD Max Day at P&B	\$791,202,885		\$21,134,963				\$812,337,848

Options

1/4/2013

# Representative Genesee County Water and Wastewater Projects

Project	Description	All Engineering Fees	Engineer's Estimate	Bid Price	Final Construction Cost
Fox Pump Station	30 mgd wastewater pump station & forcemain	\$1,829,259		\$12,394,273	\$12,394,273
		15.2%			
NEES Project	60" Relief Sewer - included tunneled sections		\$54,707,212	\$55,985,672	\$55,985,672
North Water Loop	23 miles 36" and 48" transmission main, pump station, & 20 MG Reservoir	\$4,102,610	\$29,200,000	\$23,570,110	\$23,570,110
		15.9%			
Henderson Road PS	32 MGD Water Pump Station & Two-10 MG Tanks		\$12,046,368	\$12,846,077	\$12,846,077
Pump Station #1	80 MGD wastewater pump station	\$1,735,063	\$10,269,000	\$8,225,400	\$8,225,400
		20.9%			

## Notes:

Engineering Fees include all planning, soils investigation, design, construction inspection & testing, and construction management costs

Engineering Fees % is based on final construction cost

Engineering and Contingency % is based on engineering fees + amount final construction cost exceeds estimate

Final Construction Cost % is based on difference between final construction cost and engineer's estimate

NEES Project Contractor went out of business during project - increasing cost to finish project

Projects constructed within last ten years

## **Olszewski, Rosemarie (DEQ)**

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**From:** Creal, William (DEQ)  
**Sent:** Wednesday, March 27, 2013 1:27 PM  
**To:** Sygo, Jim (DEQ); Wyant, Dan (DEQ)  
**Cc:** Busch, Stephen (DEQ); Argiroff, Phil (DEQ); Alexander, Christine (DEQ)  
**Subject:** FW: Flint Scenarios  
**Attachments:** Flint Scenarios FY 2013-14.pdf; Recent DWSD Flint Supply Cost Options.pdf; TYJT Recommendation DWSD vs Flint.pdf; flint water supply assessment final report 2-6-13.pdf; KWA - DWSD for WRD.docx

**Importance:** High

The attached word document includes WRD review of this situation, including what a withdrawal from the Flint River of 10 mgd would mean to NPDES dischargers.

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**From:** Argiroff, Phil (DEQ)  
**Sent:** Wednesday, March 27, 2013 12:27 PM  
**To:** Creal, William (DEQ)  
**Cc:** Alexander, Christine (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Bill:

Please see the attached Word write-up. It also includes the information you requested of Chris. Thanks.

-Phil

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**From:** Creal, William (DEQ)  
**Sent:** Friday, March 22, 2013 12:24 PM  
**To:** Argiroff, Phil (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Please take a look at this from a financial impact on DWSD -- can we figure out if this will be a major hit for them?

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Thursday, March 21, 2013 6:07 PM  
**To:** Shekter Smith, Liane (DEQ); Creal, William (DEQ)  
**Cc:** Willard, Veronica (DEQ); Smith, Laura (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Bill and Liane,

Please have the attached documents reviewed and comments provided relative to the City of Flint water supply needs and relative to the impacts that are possible to the Detroit System.

Treasury needs an assessment as to the need for the alternative water supply and it's impacts so they can provide input to the financial managers.

We need comments by next week and will likely meet with the Director on Thursday.

Bring in whatever staff you need for the review and please try to have your assessments by Wednesday morning.

Sorry for the tight time frame but this one is out of my hands. I will also be looking at the report.

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, March 21, 2013 5:10 PM  
**To:** Sygo, Jim (DEQ)  
**Cc:** Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Jim,

Director asked that you review and coordinate this with Liane Shekter Smith and/or Bill Creal and their appropriate staff. Director also asked that I schedule an internal meeting with you and staff on this for next week. After your review, please let me know who you want in the meeting. It needs to happen on Tuesday, Wednesday or Thursday of next week.

Thank you.

Mary Beth

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**From:** Stibitz, Brom (Treasury)  
**Sent:** Thursday, March 21, 2013 5:00 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Dillon, Andy (Treasury)  
**Subject:** FW: Flint Scenarios

Andy asked that I pass this information along to you.

Summary of FY 2013-14 DWSD Cost Allocations to Flint Under Various Scenarios  
*Flint Only*

	Revenue Requirement	Rates and Charges		
		Fixed	Commodity	Avg Unit Cost
1 Status Quo ( <i>Flint Portion</i> )	12,574,900	379,304	13.01	20.39
2 Suggested Cct ( <i>Flint Portion</i> )	11,281,100	351,661	12.06	19.27
3 Change	(1,293,800)	(27,643)	(0.95)	(1.12)
4 % Change	-10.3%	-7.3%	-7.3%	-5.5%
5 Max Day Only	9,904,300	294,542	10.87	16.91
6 Change	(1,376,800)	(57,119)	(1.19)	(2.36)
7 % Change	-13.9%	-19.4%	-10.9%	-14.0%
8 Add CTA Line to BP	10,093,100	310,271	10.87	17.23
9 Change	188,800	15,729	0.00	0.32
10 % Change	1.9%	5.1%	0.0%	1.9%
11 CTA to BP / Flint only to FWTP	12,446,300	506,371	10.87	21.25
12 Change	2,353,200	196,100	0.00	4.02
13 % Change	18.9%	38.7%	0.0%	18.9%
14 Add CTA Line to FWTP	10,191,200	318,450	10.87	17.40
15 Change	(2,255,100)	(187,921)	0.00	(3.85)
16 % Change	-22.1%	-59.0%	0.0%	-22.1%
17 CTA to FWTP / Buy existing 72	10,009,600	303,315	10.87	17.08
18 Change	(181,600)	(15,135)	0.00	(0.32)
19 % Change	-1.8%	-5.0%	0.0%	-1.9%
20 Cumulative Change	(2,565,300)	(75,989)	(2.14)	(3.31)
21 Cumulative % Change	-20.4%	-20.0%	-16.4%	-16.2%

	Assumptions				
	Avg Day mgd	Max Day mgd	Peak Hour mgd	DWSD Investment	
				CTA \$	Flint Only \$
1 Status Quo	24.6	45.6	47.7	0	0
2 Suggested Contract	23.4	40.6	42.4	0	0
3 Max Day Only	12.0	18.0	18.0	0	0
4 Add CTA Line to BP	12.0	18.0	18.0	62,290,800	0
5 CTA to BP / Flint only to FWTP	12.0	18.0	18.0	62,290,800	32,391,300
6 Add CTA Line to FWTP	12.0	18.0	18.0	94,682,100	0
7 CTA to FWTP / Buy existing 72	12.0	18.0	18.0	94,682,100	(2,500,000)

TFG

# DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contr:

## Capacity

Flint ADD:	0.00 MGD	- MCF/Day
DWSD ADD:	12 MGD	1,604 MCF/Day

## Annual Volume

Flint:	- MCF
DWSD:	585,561 MCF

## 2013 Cost of Supply

Flint WTP O&M:	- /MCF	\$ - /Yr
DWSD: \$	17.08 /MCF	\$ 10,001,390 /Yr

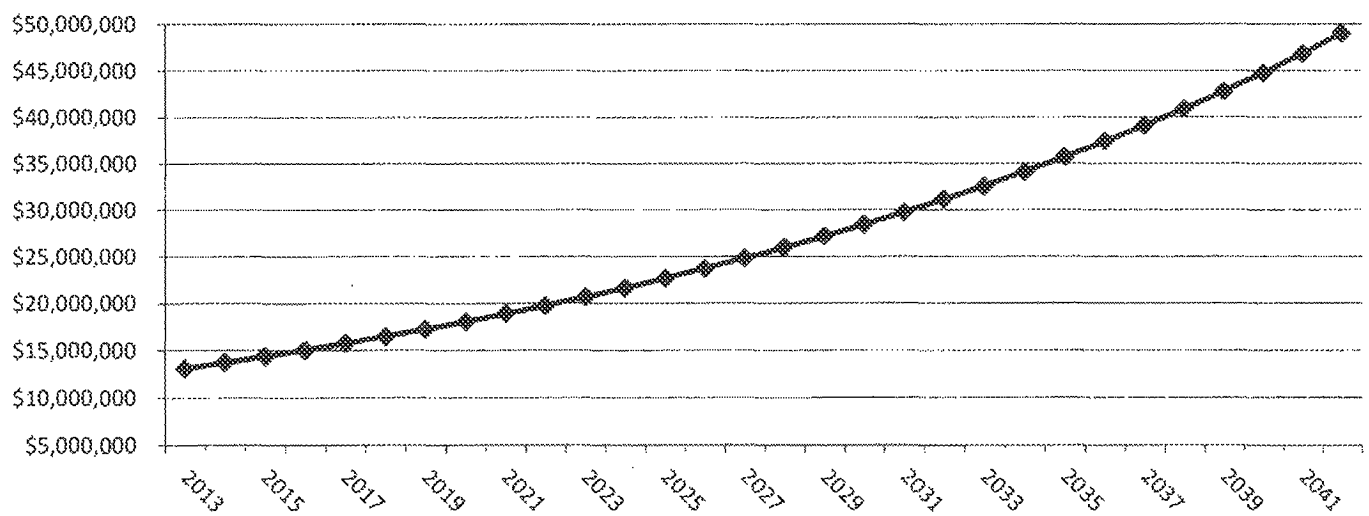
## Escalation/Inflation Rate

Flint:	4.51% /Yr
DWSD:	4.7% /Yr

## Capital Expenditure

Amount: \$	-	
Reserve: \$	-	0% Reserve Rate: 0.00%
Amount plus Reserve: \$	-	
Revenue Bond Rate:	5%	
Number of Years:	25	
Annual Cost:	\$0	

## DWSD 18 MGD Maximum Day Customer Twinning Option DWSD Owns Both Lines





# DWSD Worksheet : 18 MGD Maximum Day Customer with Model Con

## Capacity

Flint ADD:	0.00 MGD	- MCF/Day
DWSD ADD:	12 MGD	1,604 MCF/Day

## Annual Volume

Flint:	- MCF
DWSD:	585,561 MCF

## 2013 Cost of Supply

Flint WTP O&M:	- /MCF	\$ - /Yr
DWSD:	\$ 17.40 /MCF	\$ 10,188,770 /Yr

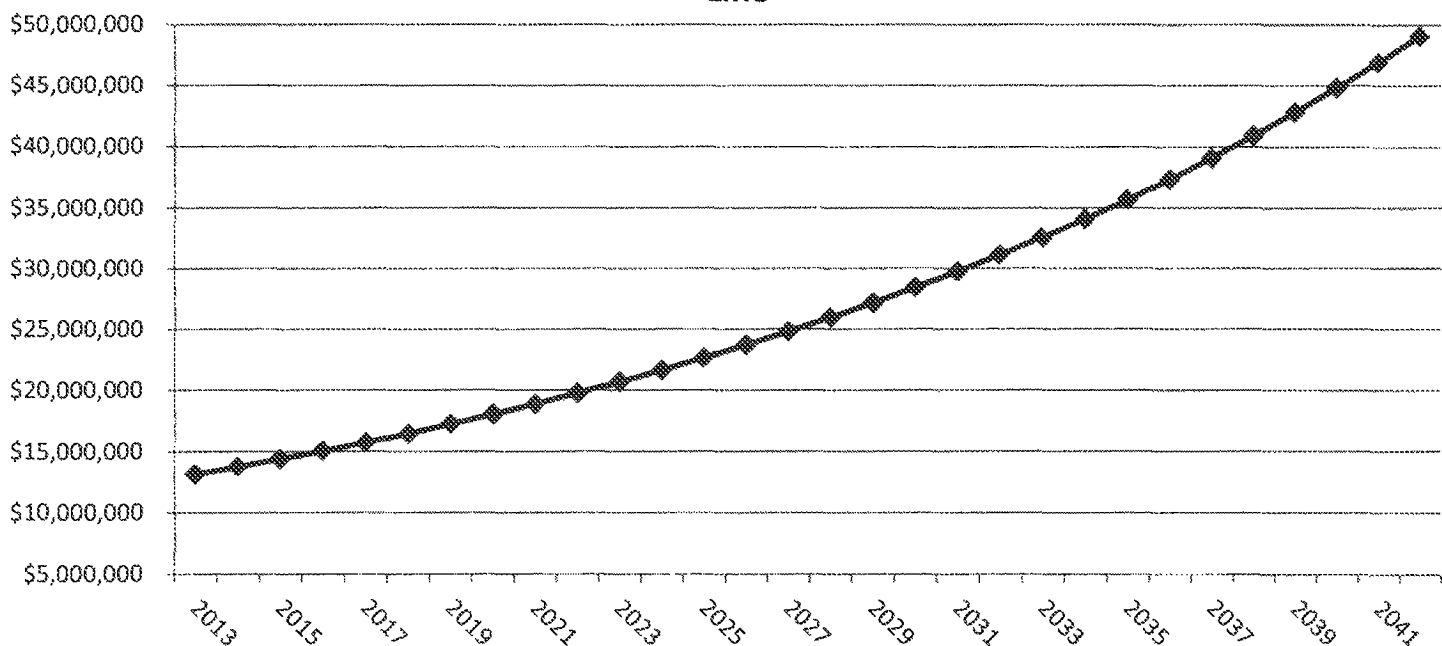
## Escalation/Inflation Rate

Flint:	4.51% /Yr
DWSD:	4.7% /Yr

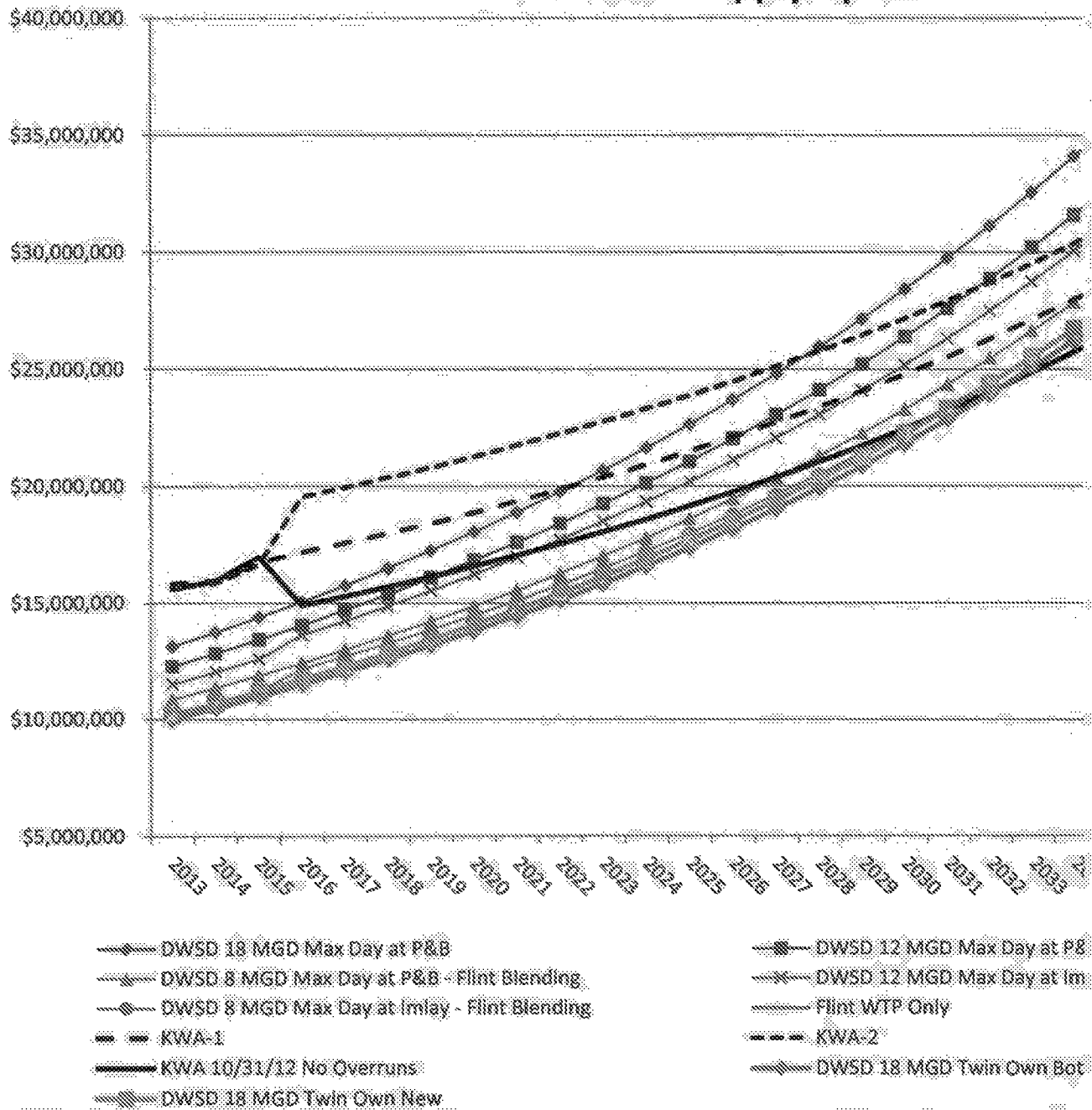
## Capital Expenditure

Amount:	\$ -	
Reserve:	\$ -	0% Reserve Rate: 0.00%
Amount plus Reserve:	\$ -	
Revenue Bond Rate:	5%	
Number of Years:	25	
Annual Cost:	\$0	

**DWSD 18 MGD Maximum Day Customer Twinning Option DWSD Owns New Line**



# Flint Water Supply Options





**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

At the request of the Treasurer, Tucker, Young, Jackson, Tull, Inc. (TYJT) makes the following recommendation to the Department of Treasury concerning Flint's water supply alternatives. Based on the financial analysis performed of the various options presented by DWSD to continue treated water service to Flint compared to Flint being supplied by the new KWA untreated water system, TYJT believes that several of the options presented by DWSD are lower in cost currently and over the long run than the one offered by KWA. TYJT also believes that DWSD's most recent offer (subsequent to the submittal of our report) to build a smaller parallel water main from Imlay to Flint, funded by the entire DWSD base of customers, is the best solution offering the least cost alternative and the required redundancy by MDEQ.

Furthermore, since a majority of the KWA system has not been designed and none of the system has been constructed, there is an additional risk that the cost of the KWA system may actually be higher than estimated due to potential construction delays and unforeseen conditions. This risk to Flint could be substantial since the city is responsible for 30 percent of the KWA design and construction costs while still having to purchase water from DWSD during the construction period.

Finally, there are other issues that were identified in our report that may result in risks to Flint if it were to join KWA that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

- DWSD's supply to Flint is via a 72-inch water main from Imlay City. This main also supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 million gallons. If Genesee and Flint move to KWA then the three remaining communities' consumption would most likely not be large enough to maintain fresh water in DWSD's pipeline (due to loss of chlorine residual). DWSD may consider shutting down the 72-inch line completely due to the water quality concerns, which would then create an additional burden for Imlay, Mayfield and GLCUA to finance treated water supplies.
- The KWA supply option is counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating from another water system is in contradiction to the program.
- There is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.
- Although Flint will be responsible for 30 percent of the construction cost, they will only have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs. Their position on the KWA Board will not provide them an ability to "control their own destiny," as they have stated to the Treasury.

**Olszewski, Rosemarie (DEQ)**

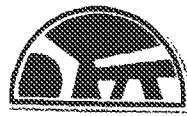
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**From:** Stibitz, Brom (DTMB)  
**Sent:** Tuesday, March 26, 2013 9:52 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Dillon, Andy (Treasury)  
**Subject:** Fwd: City of Flint Water Supply Assessment--from Rowe Professional Services Co  
**Attachments:** DOC[2].PDF; ATT00001.htm

Additional follow up information on te KWA issue.

Begin forwarded message:

**From:** "Hichez, Amy (Treasury)" <[HichezA@michigan.gov](mailto:HichezA@michigan.gov)>  
**To:** "Dillon, Andy (Treasury)" <[DillonA2@michigan.gov](mailto:DillonA2@michigan.gov)>, "Stibitz, Brom (Treasury)" <[StibitzB@michigan.gov](mailto:StibitzB@michigan.gov)>  
**Cc:** "Cousineau, Sara (Treasury)" <[CousineauS@michigan.gov](mailto:CousineauS@michigan.gov)>, "Hichez, Amy (Treasury)" <[HichezA@michigan.gov](mailto:HichezA@michigan.gov)>  
**Subject:** City of Flint Water Supply Assessment--from Rowe Professional Services Co



# ROWE PROFESSIONAL SERVICES COMPANY

*Large Firm Resources. Personal Attention.*

January 7, 2013

Mr. Edward Kurtz, Emergency Financial Manager  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502

Subject: Review of December 21, 2012 Presentation -- City of Flint Water Supply Assessment

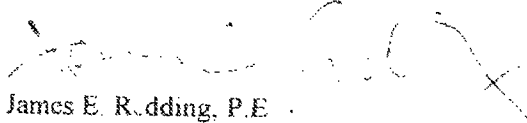
Dear Mr. Kurtz:

As requested, we have reviewed the analysis of water supply alternatives for the City of Flint which was presented to the State Department of Treasury by Tucker, Young, Jackson, and Tull, Inc. (TYJT) on December 21, 2012. Our review is attached and summarizes the primary differences between the TYJT assessment and our previous studies and provides explanations of why we believe there are differences.

We have also reviewed the options for continued DWSD supply included in the TYJT presentation. It is not clear whether these are presented as specific offers on behalf of DWSD or included as examples for analysis, but we have noted some items which we believe should be addressed and considered as these options are compared.

If there are questions, please contact me.

Sincerely,  
ROWE Professional Services Company



James E. Redding, P.E.  
Vice President / Director of Engineering

Attachment

R:\Projects\04C0105 Does\Correspondence Out\January 7 Kurtz.docx

**Review of TYJT December 21, 2012 Presentation**  
**City of Flint Water Supply Assessment**  
**Prepared by Rowe Professional Services Company**

**DWSD Supply (Slides 7 through 9)**

1. The 8 mgd maximum day supply by DWSD options can result in periods during the summer when most of the water to meet demands will be supplied by the City from the river. To aid in maintaining a consistent water quality, softening of the water from the river should be provided with this option, greatly increasing the City's costs.
2. Upgrades to Flint's WTP and dams will be needed for options requiring blending, since the WTP will be required to provide continuous, reliable service and compliance with recent surface water treatment regulations.
3. The rates for the options analyzed are shown on Slide 9 as "TYJT Estimates". Options and rates shown are different than presented by DWSD previously.

	<b>DWSD</b> <b>11/29/2012</b>	<b>TYJT</b> <b>Estimates</b>
18 mgd Maximum Day - P&B	\$16.24	\$16.37
12 mgd Maximum Day - P&B	\$16.30	\$16.31
8 mgd Maximum Day -P&B		\$12.68
12 mgd Maximum Day - Inlay	\$14.38	\$14.38
8 mgd Maximum Day - Inlay		\$11.11

4. Since the rates used in the analyses are shown as estimates, are they actual offers or just presented as "what if" scenarios?
5. We assume that the Inlay options are based on transfer of the 72" main through Lapeer County to Flint. The analyses show a capital cost of \$4.7 million; we assume that this is the proposed purchase / lease cost to Flint. This should be clarified along with pertinent details.
6. If the transmission main is transferred to Flint, what are Flint's responsibilities regarding service to the Lapeer County customers? If they remain DWSD customers, then Flint should receive some revenue for the use the main. It does not appear this is included in the TYJT analyses.
7. If the transmission main is transferred to Flint, we assume that the city will be responsible for the maintenance of the 50 year old main. The TYJT analysis did not include this.
8. Do the rates shown include the credit for "reliability" which had been discussed with DWSD?
9. If the point of commerce is changed from Baxter and Potter to Inlay, a new meter pit will be required. The cost of this does not appear to be included in the TYJT cost analyses.

#### **Flint River Supply (Slide 10)**

1. If any of the "blending" options are chosen, it will be necessary to upgrade the Flint WTP and dams to provide reliable, continuous service and compliance with recent surface water treatment regulations.

#### **Data Collected (Slide 14)**

1. The slide notes that Flint blending is based on DWSD supplying 2/3 and Flint supplying 1/3 of 12 MGD ADD. For the maximum day demand (18 mgd), if DWSD supplies a maximum of 8 mgd, Flint will supply 10 mgd or 56% of the total. However, such a large portion will make it more difficult to blend and achieve consistent water quality. Flint will need to soften water for these options.

#### **Benchmarking Comparisons (Slide 16)**

1. The slide subtitles are "KWA O&M Inflation Factor" and "DWSD and Flint Rate Inflation Factor". It seems appropriate to benchmark O&M costs for the KWA, because future costs of service will be dependent on how operating costs are impacted by inflation. For Flint, it does not seem appropriate that "rate inflation" from other utilities be used to determine the impact of inflation on future cost of service. Rates are impacted by inflation, but also by other factors such as debt and customer base. O&M expenses and rates are different and care should be exercised not to mix the two during analyses. The TYJT analyses apply an inflation factor (based on rates from other utilities) to the Flint WTP operating expenses, which does not seem to be consistent.
2. The KWA will supply raw water; SOCWA and YUCA both supply finished water. Regulations impact the O&M for finished water suppliers but should not impact the KWA O&M. The use of data from SOCWA and YUCA does not seem like a comparable comparison with the KWA. Finished water suppliers will have increased costs due to regulatory compliance, which really are not due to "inflation" of the costs of wages, power, chemicals, etc.
3. DWSD has a history of rates to Flint and other suburban wholesale customers. Rates tend to be quite specific to each utility, based on much more than just the costs of operating and maintenance. It appears that DWSD historical rates have not been considered in projecting future DWSD rate increases.

#### **Capital Financing (Slide 17)**

1. KWA bonds are planned to be general obligation bonds, backed by member counties.

#### **O&M Inflation Factor (Slide 20)**

1. SOCWA and YUCA are finished water suppliers; ever-changing regulatory requirements will impact their operating costs more than a raw water supplier, such as KWA.
2. KWA will be a supplier of raw water. O&M costs should primarily be limited to power and labor, with a little chemical use for zebra mussel control. KWA will not provide treatment of the water.

3. The KWA study assumed power, labor, and chemical costs increase at an annual average of 3%. TYJT indicated this is too low and suggested 5%.
4. Following are examples of historical inflation, which support the 3% as a reasonable assumption for O&M expenses (not rates)
  - a. Labor- GCDC-WWS labor costs have increased at an annual average rate of 2.5% since 2003
  - b. Electricity Rates in Michigan (per U.S. Energy Information Administration) have increased an average of 3.2% since 1999.
  - c. The U.S. Bureau of Labor Statistics indicates that the inflation rate over the last 30 years has been an average of 2.8%.

#### **Finished Water Rate Inflation (Slide 21)**

1. TYJT bases their assumptions for rate inflation on a survey of rates from three other water suppliers, but ignored the actual rate history of DWSD. TYJT assumed DWSD rate increases of 4.4% annually (if water is purchased from P&B) and 2.9% annually (if water is purchased from Inlay). Based on the actual charges by DWSD to Flint, DWSD historical rates are as follows:
  - a. 10 year increase in DWSD rates to Flint: 10.5% annually
  - b. Average annual increase through 45 year history: 6.7%
2. Note that for the KWA analyses, an inflation factor has just been applied to power, labor, and chemicals. Although higher prices for labor, power, and chemicals impacts utility rates; rates are impacted by many other factors, many of which are not related to inflation. Rate inflation will likely be different than O&M inflation. Other factors impacting rates:
  - a. Debt – the amount of debt varies widely between utilities
  - b. Number of customers / quantity of water sold – there are many fixed expenses with a utility, that if are distributed amongst more users/more gallons sold will result in lower rates. Conversely, if there are fewer users or less water sold, the rates are higher. Assumptions regarding future water consumption will have a great impact on “rate inflation”.
3. Unlike KWA and Flint operating expenses which will increase over time based on inflation, the cost of continued DWSD service should be based on the inflation of DWSD rates, to include the increasing cost of other DWSD expenses such as debt and the impact of reduced customers’ demands in addition to increasing O&M expenses.
4. Even though there could be a one-time reduction in DWSD rates through adopting the model contract, limiting peak demands, and or changing the point of commerce: it doesn’t seem reasonable to assume that subsequent annual increases will only average 4.4% through the 30 year period of analysis. This is significantly less than historical performance (yet TYJT suggests that inflation for KWA O&M expenses will increase at almost double the rate of historical indicators).



### Capital Financing with Revenue Bonds (Slide 24)

1. Note that the KWA bonds will be general obligation bonds backed by the member counties.
2. The 2009 KWA Study assumed 6%, 25 year financing. The interest rate for planning was reduced in the 2012 Study update to 5%, which is still higher than if bonds were sold today.
3. Financial consultants determined the charges for purchasing capacity in the KWA supply based on the estimated project cost plus appropriate financing costs. Based on 60 units of capacity, \$538,764,000 will be generated for repayment of debt and project costs using the capacity charges in the KWA capacity agreement.  

25 years * 60 units * \$355,300 / unit =	\$532,950,000
3 years * 60 units * \$32,300 / unit =	<u>\$ 5,814,000</u>
	\$538,764,000
4. For a KWA project cost of \$272,421,558, total P&I is \$483 million. The difference of \$55,500,000 is available for financing expenses (capitalized interest, bond issuance costs, etc.) and additional contingencies.
5. Bond holder reserve is not a requirement for general obligation bonds.
6. TYJT assumed that 3% interest would be earned on the bond holder reserve during the 25 year bond period. Current interest rates are less than 1% and it seems inappropriate to assume such a high rate will be earned on retained funds.
7. Bondholder reserve, if provided, should be applied against the last couple of P&I payments. The TYJT did not apply it. This will reduce their project costs.

### KWA Construction (Slides 26 through 29)

TYJT has indicated that the KWA construction cost estimate is too low. The primary differences in cost estimates for the project appear to be the following components:

1. Pump Stations (Slide 27) – The TYJT estimate for the pump stations is more than double that used by the KWA (\$54,573,314 vs. \$24,618,080). KWA estimates were based on actual construction costs from recent projects completed by Genesee County within the last eight years.
  - a. 32mgd water pump station including two-10 MG ground storage tanks – \$13.4 million
  - b. 80 mgd wastewater pump station, 50 feet deep wetwell – \$8.3 million
  - c. 30 mgd wastewater pump station, 50 feet deep wetwell – \$9.4 million

The KWA budgeted amount seems reasonable for two pumping stations as currently planned and to be constructed in rural areas (not southeast Michigan).

2. Redundant Power – There is no need for redundant power; other provisions will provide reliability of supply.
3. Land – Preliminary engineering has continued so earlier budgets established for planning for land acquisition can be greatly reduced. Options have been obtained on all properties which must be

purchased, so purchase prices are known. It will be necessary to obtain easements for only two miles of pipeline construction. All land costs are now estimated at \$1.25 million.

4. Engineering, Legal, Administration & Contingencies

- a. The October 2012 KWA estimate provided an allowance of 25% of construction cost to cover engineering, legal, administration, and contingencies (ELAC). This was reduced from the 38% allowance used in the 2009 Study because ongoing planning and design have firmed up many of the details of the project, including:
  - i. The intake design has been completed and all regulatory permits obtained.
  - ii. The transmission main route has been determined. Meetings with road agencies have firmed up the requirements for construction and restoration within rights-of-way. Environmental review and permitting are in process.

- b. TYJT costs for Intake Crib, Pump Stations, and Transmission Mains (Slide 30) include a 30% allowance for ELAC. These allowances (from Slides 26 through 28) total \$72,139,566. In addition, Slide 30 provides the following additional ELAC costs in the project total:

Design Engineering / Pump Stations	\$16,939,581
Construction Management	\$14,434,410
Administration	\$ 349,440
Legal	\$ 831,000
Total	\$32,554,431

- c. Combining this with the \$72,139,566 totals \$104,693,997 or 43% of the estimated construction cost. We believe that such a high allowance for ELAC is not appropriate for a project of this magnitude where preliminary engineering and some design have already been completed.

**Cost Comparison (Slide 30)**

1. The TYJT pump station price is too high based on costs of similar projects; costs used by KWA are based on costs of recent local projects. The KWA estimate is believed to be sufficient for the proposed pumping stations.
2. Redundant power is not required; this does not need to be included in the TYJT estimate.
3. Land for LHPS – actual price is \$360,000
4. Design Engineering : PS and Transmission – KWA included engineering in the 25% ELAC allowance included in the \$207,752,895 estimated cost of transmission mains; TYJT included engineering in their 30% ELAC allowance included in the \$218,811,559 estimated cost. By adding \$16,939,581 for design engineering, \$14,434,609 for construction administration, \$349,440 for administration, and \$831,000; it seems that ELAC is being “double-counted”. The TYJT 43% allowance for ELAC seems unwarranted for a project with a great deal of preliminary and design engineering completed. The 25% KWA allowance is believed to be sufficient.
5. Easements and land (other than LHPS) should total \$1,140,000, based on current options and specific needs for easements.

### **Other Considerations – Redundancy / Reliability (Slide 33)**

1. **Unfunded Mandates. Future Regulations**
  - a. The proposed KWA supply will deliver raw water; it is not anticipated to be affected by future changes to regulations. Regulations will impact the City of Flint with respect to treatment and/or distribution of finished water. The City will be subject to these requirements with any of the DWSD blending options, just as they will be responsible for them if supplied by KWA. Some compliance costs may actually be less with the higher quality Lake Huron water rather than Flint River water as the source.
2. **State Goals**
  - a. The TYJT presentation indicates that creation of a new raw water supply is contrary to the governor's goals as suggested. However, the development of a new raw water supply provides new opportunities. Communities in Sanilac, St. Clair, and Lapeer counties will have the option to join a regional water supply and replace their small local supplies where limited supplies and high concentrations of arsenic have been a concern. The new water supply also provides great economic development opportunities. The raw water supplied by KWA will make a new commodity, raw water, available to the region. A large, low-cost supply of raw water can be a valuable resource for industries and agribusinesses. The development of a new water supply will also create construction jobs through the short term period of building the new water supply and subsequently over a longer period as new businesses and industries are developed in the area.
  - b. The City of Flint and area communities will benefit as permanent jobs are created for operating and maintaining the local treatment facilities.
3. **Redundancy**
  - a. We agree that the KWA and DWSD options are similar with respect to redundancy. Both provide the primary water supply; customers are responsible for their backup supply.

### **Other Considerations – Cost Slide 34**

1. TYJT indicates that the DWSD 8 mgd supply option is the least cost alternative.
  - a. The TYJT analysis does not include the cost of needed upgrades to the City's WTP or increased operating costs in their analysis. During summer months, water from the river will need to be softened before blending. More than half of the water supplied will be provided from the river. When the cost of upgrades to the WTP and the increased operating costs (for softening) are added to the TYJT analysis, the KWA option is less than the DWSD 8 mgd option.
2. For any of the DWSD "blending" options, upgrades will need to be made at the WTP to provide for continuous, reliable operation and compliance with new surface water treatment rules. Increased capital and operating costs for treating water from the river should be added to the TYJT costs for comparison with the other options.
3. Water from the river will require greater effort to treat than water from Lake Huron (more chemicals, power, and residuals). The TYJT analysis shows about the same O&M costs for the Flint WTP, regardless of water source. It seems that the WTP O&M costs for the KWA options should be reduced to reflect the savings from treating Lake Huron water.

4. The TYJT presentation noted that the KWA analysis did not include allowances for mechanical and process improvements within the planning period. The KWA will supply raw water. The facilities consist of pipe, pumps, and a tank. There are no treatment facilities which would be susceptible to future regulatory changes. The only improvements that seem likely would be the need to provide additional capacity. Capacity expansion is planned to be financed through capacity charges to new users.
5. The provision for redundant connections between the City's water system and the GCDC system was included in the most recent water supply agreement between the two, in 2011. Although not a KWA cost, the cost of the redundant connections should be considered with all options.
6. The \$2.3 million budgeted for land by KWA was intended to cover all land requirements. Since the October update, options have been obtained on all land to be purchased and the locations of easements needed has been finalized. Total land costs are now estimated to be about \$1.5 million.
7. The 2004 study included a 47% allowance for engineering, legal, administration, and contingencies (ELAC). The 2009 study reduced the allowance for ELAC to 37% because many of the details since the 2004 conceptual study had been better defined. For the October 2012 update, the allowance for ELAC was reduced to 25% because continued planning and preliminary engineering further addressed details from the earlier concepts.
  - a. The detailed design (plans and specifications) and permitting have been completed.
  - b. The transmission main route has been finalized. Meetings with road agencies have established requirements for construction and restoration within road rights-of-way. Environmental permitting is in process. The primary remaining unknown is pipe sizing, which is largely dependent on Flint's participation.

It is our experience that the 25% ELAC allowance is appropriate for a project of this magnitude at this stage in the planning / design stage. The 43% ELAC allowance recommended by TYJT is excessive for a project in the design phase.

8. Flint's WTP as a backup to the KWA will be less difficult to provide for than the current arrangement as a backup to DWSD. We believe there is potential for challenges with chemistry and treatment for the proposed DWSD blending options, too.
9. It doesn't seem that oversizing the KWA capacity is a good solution for the city's water loss problems, if that is what is being suggested.
10. Yes, it would be nice if the KWA system could be constructed to firmly determine its cost and time to complete before making a decision about water supply alternatives. However, a decision is needed regarding Flint's participation so that the sizing and design can be completed, before it can be built.

**Project Costs - TYJT Slides 26 through 30**

	KWA	TYJT
Intake and Crib		
Construction	\$22,076,850	\$22,076,850
ELAC	\$5,519,213	\$5,519,213
Property	\$2,300,000	\$2,300,000
Pumping Stations		
Construction	\$24,618,080	\$54,573,314
Land		\$75,000
ELAC	\$6,154,520	\$16,394,494
Transmission Mains		
Construction	\$166,202,316	\$167,419,530
ELAC	\$41,550,579	\$50,225,859
Easements		\$1,166,170
Engineering		
Design Engineering		\$16,939,581
Construction Management		\$14,434,609
Administration		\$349,440
Legal / Easements / Contracts		\$831,000
Power	\$4,000,000	\$4,000,000
Redundant Power		\$1,273,200
Total Construction	\$212,897,246	\$244,069,694
Total ELAC	\$53,224,312	\$104,694,196
Total Land / Property / Easements	\$2,300,000	\$3,541,170
Total Power	\$4,000,000	\$4,000,000
Total Redundant Power	\$0	\$1,273,200
Total	\$272,421,558	\$357,578,260
ELAC as % of Construction	25.0%	42.9%

Option	TYJT Total Cost	TYJT minus additional costs of river treatment	TYJT minus additional costs of river treatment plus redundant Flint-GCDC connections	TYJT minus additional costs of river treatment plus redundant connections less KWA reserve	TYJT minus additional costs of river treatment plus redundant connections less TYJT financing	TYJT plus Flint WTP	Adjusted Total Cost	Ranking
1 Flint WTP Only	\$590,441,893						\$590,441,893	3
2 DWSD 8 MGD Max Day at Inlay	\$621,211,298					\$771,289,948	\$771,289,948	5
3 KWA 10/31/12 Update	\$649,775,166	\$534,615,996	\$554,555,960				\$554,555,960	1
4 DWSD 8 MGD Max Day at P&B	\$657,167,877					\$807,246,527	\$807,246,527	6
5 KWA-1	\$707,279,715	\$592,120,545	\$612,060,509		\$572,731,459		\$572,731,459	2
6 DWSD 12 MGD Max Day at Inlay	\$707,994,386					\$858,073,036	\$858,073,036	8
7 DWSD 12 MGD Max Day at P&B	\$742,168,081					\$892,246,731	\$892,246,731	9
8 KWA - 2	\$766,784,313	\$651,625,143	\$671,565,107	\$654,706,341			\$654,706,341	4
9 DWSD 18 MGD Max Day at P&B	\$791,202,885					\$812,337,848	\$812,337,848	7

Option for River Segments	TYJT Projected 30 Year Total Cost	30 Year O&M Reduction for Treating Lake Huron Water	25 Year Bond Cost for Redundant Connections	Eliminate KWA Reserve	Use KWA 25 Year Capital Charge \$155,300 MGD	25 Year Bond Cost for Flint WTP Upgrades	Adjusted 30 Year Total Cost	Rank Closest to Highest Cost
1 Flint WTP Only	\$590,441,893		Included				\$590,441,893	3
2 DWSD 8 MGD Max Day at Inlay	\$621,211,298		Note 1			\$150,078,650	\$771,289,948	5
3 KWA 10/31/12 Update	\$649,775,166	-\$115,159,170	\$21,134,963				\$555,750,960	1
4 DWSD 8 MGD Max Day at P&B	\$657,167,877		Note 1			\$150,078,650	\$807,246,527	6
5 KWA-1	\$707,279,715	-\$115,159,170	\$21,134,963		-\$39,329,050		\$573,926,459	2
6 DWSD 12 MGD Max Day at Inlay	\$707,994,386		Note 1			\$150,078,650	\$858,073,036	8
7 DWSD 12 MGD Max Day at P&B	\$742,168,081		Note 1			\$150,078,650	\$892,246,731	9
8 KWA - 2	\$766,784,313	-\$115,159,170	\$21,134,963	-\$16,858,766			\$655,901,341	4
9 DWSD 18 MGD Max Day at P&B	\$791,202,885		\$21,134,963				\$812,337,848	7

**Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, March 21, 2013 5:10 PM  
**To:** Sygo, Jim (DEQ)  
**Cc:** Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** FW: Flint Scenarios  
**Attachments:** Flint Scenarios FY 2013-14.pdf; Recent DWSD Flint Supply Cost Options.pdf; TYJT Recommendation DWSD vs Flint.pdf; flint water supply assessment final report 2-6-13.pdf

**Importance:** High

Jim,

Director asked that you review and coordinate this with Liane Shekter Smith and/or Bill Creal and their appropriate staff. Director also asked that I schedule an internal meeting with you and staff on this for next week. After your review, please let me know who you want in the meeting. It needs to happen on Tuesday, Wednesday or Thursday of next week.

Thank you.

Mary Beth

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**From:** Stibitz, Brom (Treasury)  
**Sent:** Thursday, March 21, 2013 5:00 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Dillon, Andy (Treasury)  
**Subject:** FW: Flint Scenarios

Andy asked that I pass this information along to you.

**Summary of FY 2013-14 DWSD Cost Allocations to Flint Under Various Scenarios**  
**Flint Only**

	Revenue Requirement	Rates and Charges		
		Fixed	Commodity	Avg Unit Cost
1 Status Quo (Flint Portion)	12,574,900	379,304	13.01	20.39
2 Suggested Cct (Flint Portion)	11,281,100	351,661	12.06	19.27
3 Change	(1,293,800)	(27,643)	(0.95)	(1.12)
4 % Change	-10.3%	-7.3%	-7.3%	-5.5%
5 Max Day Only	9,904,300	294,542	10.87	16.91
6 Change	(1,376,800)	(57,119)	(1.19)	(2.36)
7 % Change	-13.9%	-19.4%	-10.9%	-14.0%
8 Add CTA Line to BP	10,093,100	310,271	10.87	17.23
9 Change	188,800	15,729	0.00	0.32
10 % Change	1.9%	5.1%	0.0%	1.9%
11 CTA to BP / Flint only to FWTP	12,446,300	506,371	10.87	21.25
12 Change	2,353,200	196,100	0.00	4.02
13 % Change	18.9%	38.7%	0.0%	18.9%
14 Add CTA Line to FWTP	10,191,200	318,450	10.87	17.40
15 Change	(2,255,100)	(187,921)	0.00	(3.85)
16 % Change	-22.1%	-59.0%	0.0%	-22.1%
17 CTA to FWTP / Buy existing 72	10,009,600	303,315	10.87	17.08
18 Change	(181,600)	(15,135)	0.00	(0.32)
19 % Change	-1.8%	-5.0%	0.0%	-1.9%
20 Cumulative Change	(2,565,300)	(75,989)	(2.14)	(3.31)
21 Cumulative % Change	-20.4%	-20.0%	-16.4%	-16.2%

	Assumptions				
	Avg Day mgd	Max Day mgd	Peak Hour mgd	DWSD Investment	
				CTA \$	Flint Only \$
1 Status Quo	24.6	45.6	47.7	0	0
2 Suggested Contract	23.4	40.6	42.4	0	0
3 Max Day Only	12.0	18.0	18.0	0	0
4 Add CTA Line to BP	12.0	18.0	18.0	62,290,800	0
5 CTA to BP / Flint only to FWTP	12.0	18.0	18.0	62,290,800	32,391,300
6 Add CTA Line to FWTP	12.0	18.0	18.0	94,682,100	0
7 CTA to FWTP / Buy existing 72	12.0	18.0	18.0	94,682,100	(2,500,000)

**TFC**





**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

At the request of the Treasurer, Tucker, Young, Jackson, Tull, Inc. (TYJT) makes the following recommendation to the Department of Treasury concerning Flint's water supply alternatives. Based on the financial analysis performed of the various options presented by DWSD to continue treated water service to Flint compared to Flint being supplied by the new KWA untreated water system, TYJT believes that several of the options presented by DWSD are lower in cost currently and over the long run than the one offered by KWA. TYJT also believes that DWSD's most recent offer (subsequent to the submittal of our report) to build a smaller parallel water main from Imlay to Flint, funded by the entire DWSD base of customers, is the best solution offering the least cost alternative and the required redundancy by MDEQ.

Furthermore, since a majority of the KWA system has not been designed and none of the system has been constructed, there is an additional risk that the cost of the KWA system may actually be higher than estimated due to potential construction delays and unforeseen conditions. This risk to Flint could be substantial since the city is responsible for 30 percent of the KWA design and construction costs while still having to purchase water from DWSD during the construction period.

Finally, there are other issues that were identified in our report that may result in risks to Flint if it were to join KWA that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

- DWSD's supply to Flint is via a 72-inch water main from Imlay City. This main also supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 million gallons. If Genesee and Flint move to KWA then the three remaining communities' consumption would most likely not be large enough to maintain fresh water in DWSD's pipeline (due to loss of chlorine residual). DWSD may consider shutting down the 72-inch line completely due to the water quality concerns, which would then create an additional burden for Imlay, Mayfield and GLCUA to finance treated water supplies.
- The KWA supply option is counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating from another water system is in contradiction to the program.
- There is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.
- Although Flint will be responsible for 30 percent of the construction cost, they will only have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs. Their position on the KWA Board will not provide them an ability to "control their own destiny," as they have stated to the Treasury.

**DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contract Twinning Line and Owning both to the Flint WTP**

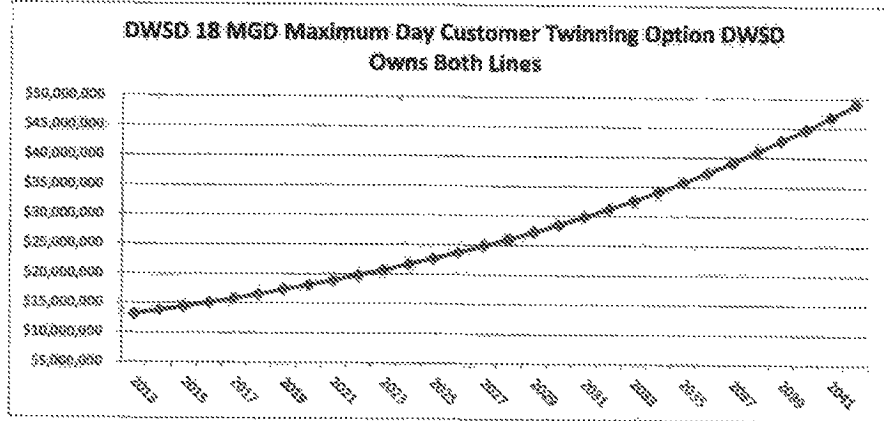
Capacity:  
 Flint ADD: 0.00 MGD - MCF/Day  
 DWSD ADD: 12 MGD 1,604 MCF/Day

Annual Volume  
 Flint: - MCF  
 DWSD: 983,561 MCF

2013 Cost of Supply  
 Flint WTP O&M: - /MCF \$ - /Yr  
 DWSD: \$ 17.98 /MCF \$ 10,001,390 /Yr

Escalation/Inflation Rate  
 Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

Capital Expenditure  
 Amount: \$ -  
 Reserve: \$ - 0% Reserve Rate: 0.007%  
 Amount plus Reserve: \$ -  
 Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$0



	Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
1	2013	\$ -	10,001,390	-	-	\$ 10,001,390
2	2014	\$ -	10,471,456	-	-	\$ 10,471,456
3	2015	\$ -	10,963,614	-	-	\$ 10,963,614
4	2016	\$ -	11,478,904	-	-	\$ 11,478,904
5	2017	\$ -	12,018,412	-	-	\$ 12,018,412
6	2018	\$ -	12,583,278	-	-	\$ 12,583,278
7	2019	\$ -	13,174,692	-	-	\$ 13,174,692
8	2020	\$ -	13,793,902	-	-	\$ 13,793,902
9	2021	\$ -	14,442,216	-	-	\$ 14,442,216
10	2022	\$ -	15,121,000	-	-	\$ 15,121,000
11	2023	\$ -	15,831,887	-	-	\$ 15,831,887
12	2024	\$ -	16,575,776	-	-	\$ 16,575,776
13	2025	\$ -	17,354,888	-	-	\$ 17,354,888
14	2026	\$ -	18,170,515	-	-	\$ 18,170,515
15	2027	\$ -	19,024,529	-	-	\$ 19,024,529
16	2028	\$ -	19,918,682	-	-	\$ 19,918,682
17	2029	\$ -	20,854,860	-	-	\$ 20,854,860
18	2030	\$ -	21,835,039	-	-	\$ 21,835,039
19	2031	\$ -	22,861,266	-	-	\$ 22,861,266
20	2032	\$ -	23,935,766	-	-	\$ 23,935,766
21	2033	\$ -	25,060,747	-	-	\$ 25,060,747
22	2034	\$ -	26,238,602	-	-	\$ 26,238,602
23	2035	\$ -	27,471,816	-	-	\$ 27,471,816
24	2036	\$ -	28,762,892	-	-	\$ 28,762,892
25	2037	\$ -	30,114,852	-	-	\$ 30,114,852
	2038	\$ -	31,530,250	-	-	\$ 31,530,250
	2039	\$ -	33,012,172	-	-	\$ 33,012,172
	2040	\$ -	34,563,744	-	-	\$ 34,563,744
	2041	\$ -	36,188,240	-	-	\$ 36,188,240
	2042	\$ -	37,889,088	-	-	\$ 37,889,088

**25 Yrs Cumulative**  
 \$ 458,060,853

**30 Yrs Cumulative**  
 \$ 631,244,349

**DWSD Worksheet : 18 MGD Maximum Day Customer with Model Contract Twinning Line and Owning Only New Line to the Flint WTP**

**Capacity:**  
 Flint ADD: 0.08 MGD - MCF/Day  
 DWSD ADD: 12 MGD 1,804 MCF/Day

**Annual Volume:**  
 Flint: - MCF  
 DWSD: 585,561 MCF

**2013 Cost of Supply:**  
 Flint WTP O&M: - /MCF \$ - /Yr  
 DWSD: \$ 17.48 /MCF \$ 10,188,770 /Yr

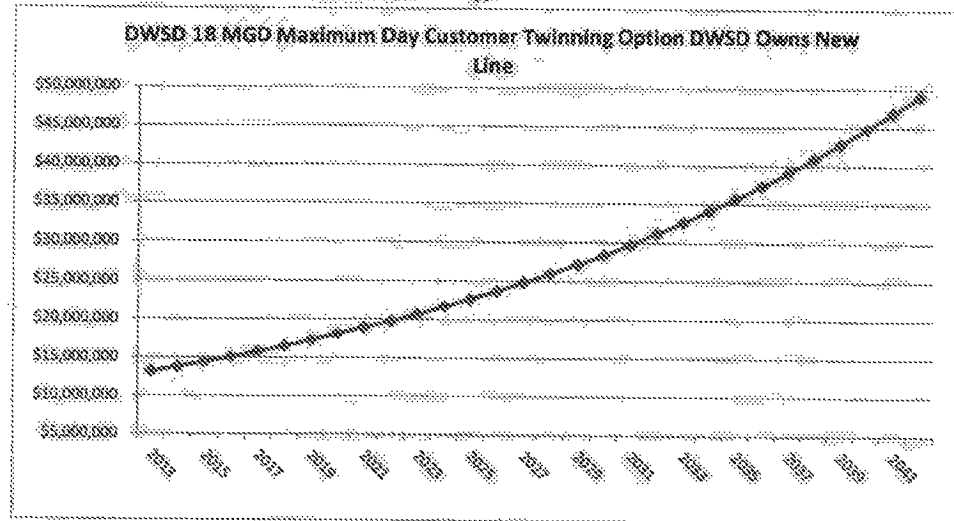
**Escalation/Inflation Rate:**  
 Flint: 4.51% /Yr  
 DWSD: 4.7% /Yr

**Capital Expenditure:**  
 Amount: \$ -  
 Reserve: \$ - 0% Reserve Rate: 0.00%  
 Amount plus Reserve: \$ -  
 Revenue Bond Rate: 5%  
 Number of Years: 25  
 Annual Cost: \$0

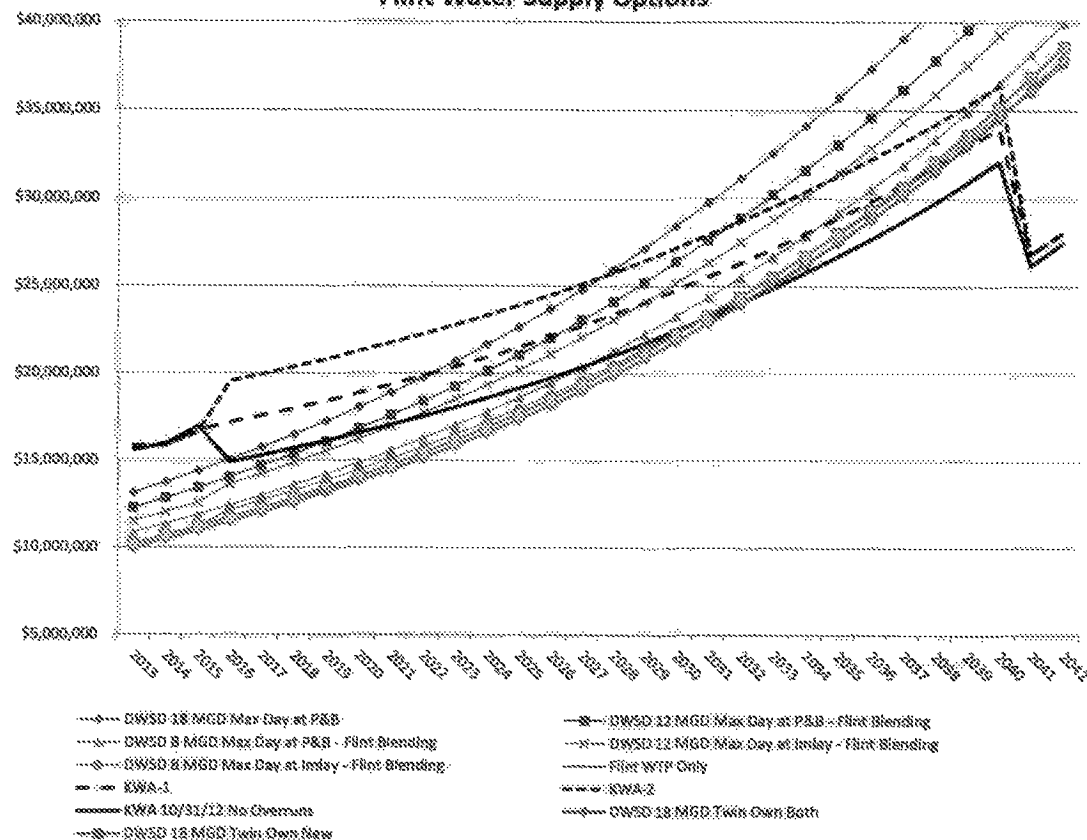
Year	Flint WTP O&M	Water Purchase	Revenue Bond Payment	Interest on Reserve	TOTAL
1	2013	\$ - 10,188,770	-	-	\$ 10,188,770
2	2014	\$ - 10,667,642	-	-	\$ 10,667,642
3	2015	\$ - 11,169,021	-	-	\$ 11,169,021
4	2016	\$ - 11,693,965	-	-	\$ 11,693,965
5	2017	\$ - 12,243,582	-	-	\$ 12,243,582
6	2018	\$ - 12,819,030	-	-	\$ 12,819,030
7	2019	\$ - 13,421,525	-	-	\$ 13,421,525
8	2020	\$ - 14,052,336	-	-	\$ 14,052,336
9	2021	\$ - 14,712,796	-	-	\$ 14,712,796
10	2022	\$ - 15,404,297	-	-	\$ 15,404,297
11	2023	\$ - 16,128,799	-	-	\$ 16,128,799
12	2024	\$ - 16,886,330	-	-	\$ 16,886,330
13	2025	\$ - 17,679,987	-	-	\$ 17,679,987
14	2026	\$ - 18,510,946	-	-	\$ 18,510,946
15	2027	\$ - 19,380,961	-	-	\$ 19,380,961
16	2028	\$ - 20,291,866	-	-	\$ 20,291,866
17	2029	\$ - 21,245,584	-	-	\$ 21,245,584
18	2030	\$ - 22,244,126	-	-	\$ 22,244,126
19	2031	\$ - 23,289,600	-	-	\$ 23,289,600
20	2032	\$ - 24,384,211	-	-	\$ 24,384,211
21	2033	\$ - 25,530,269	-	-	\$ 25,530,269
22	2034	\$ - 26,730,192	-	-	\$ 26,730,192
23	2035	\$ - 27,986,511	-	-	\$ 27,986,511
24	2036	\$ - 29,301,877	-	-	\$ 29,301,877
25	2037	\$ - 30,679,065	-	-	\$ 30,679,065
	2038	\$ - 32,120,981	-	-	\$ 32,120,981
	2039	\$ - 33,630,667	-	-	\$ 33,630,667
	2040	\$ - 35,211,309	-	-	\$ 35,211,309
	2041	\$ - 36,866,240	-	-	\$ 36,866,240
	2042	\$ - 38,598,953	-	-	\$ 38,598,953

**25 Yrs Cumulative**  
 \$ 468,642,730

**30 Yrs Cumulative**  
 \$ 643,070,941



### Flint Water Supply Options



Option	Costs through 2042	Ranking
Flint WTP Only	\$ 590,441,893	1
DWSD 8 MGD Max Day at Inlay	\$ 634,795,488	2
KWA 10/31/12 Update	\$ 649,775,166	3
DWSD 8 MGD Max Day at P&B	\$ 672,671,705	4
KWA-1	\$ 707,279,715	5
DWSD 12 MGD Max Day at Inlay	\$ 725,576,803	6
DWSD 12 MGD Max Day at P&B	\$ 762,110,308	7
KWA-2	\$ 766,784,313	8
DWSD 18 MGD Max Day at P&B	\$ 821,326,268	9
DWSD 18 MGD Max Twin Own Both	\$ 631,344,345	
DWSD 18 MGD Max Own New Line	\$ 643,070,941	

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**STATE OF MICHIGAN CONTRACT NO. 271N3200089**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**  
**February 2013**

For Submittal to:

**State of Michigan, Department of Treasury**



Submitted by:

**TY** TUCKER, YOUNG,  
**JD** JACKSON, TULL INC.

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## ***Appendices***

Appendices A – Meeting Minutes

Appendix B – Cost Worksheets

## ***1. INTRODUCTION***

Tucker, Young, Jackson, Tull, Inc. (TYJT), at the request of the State Treasurer performed an analysis of the water supply options being considered by the City of Flint. The City of Flint is presently supplied potable water from the Detroit Water and Sewerage Department (DWSD). This supply is from a single 72-inch water main that terminates at a master meter located at Potter and Baxter. Additionally, downstream of the DWSD master meter, Flint supplies its customer Genesee County. The City of Flint also operates a water treatment plant that uses the Flint River as its source of supply to provide back up and redundancy to the DWSD supply as required by MDEQ.

The Karegnondi Water Authority (KWA) is planning on constructing a raw water supply system that could provide Lake Huron water to the Flint Water Treatment Plant. Flint's existing plant would be upgraded to treat the new raw water source.

The State Treasurer has appointed an emergency financial manager for the City of Flint. As such the Treasurer has requested TYJT to provide an analysis of the water supply options to assist the Treasurer in determining any potential risk and the best course going forward for supplying potable water to the City of Flint.

### ***Report Organization***

The following sections of this report are described below:

Section 2 – The basis of the analysis is described in this section. The options include the KWA option and several options offered by DWSD.

Section 3 – A significant amount of information and data was collected including memorandums, reports, drawings, financial reports, and other documents. This section summarizes the information used in the analysis.

Section 4 – This section describes the evaluation of the cost of supply for the Flint options. The costs are comprised of the initial cost of operations plus the annual rate of escalation/inflation.

Section 5 – The evaluation process used to analyze the construction costs associated with the KWA supply system is described in this section. Additionally, the cost of financing the capital requirements is described.

Section 6 – This section presents the financial review of the options considered to supply potable water to Flint. A summary of these options is also provided.

Section 7 – In addition to the financial analysis other considerations were identified that should be considered in understanding the risks and determining the best option to supply Flint. They include items related to cost, redundancy and reliability, and Flint's ability to control their future cost of water supply.



## ***2. FLINT WATER SUPPLY OPTIONS***

Two water purveyor options were evaluated; the KWA water supply system and continued supply from DWSD. Both suppliers would provide water from Lake Huron as the source. The KWA system is a raw water supply, which means that the water would have to be treated by Flint before distributing the potable water to its customers. The DWSD supply is potable or "finished" water and would not need additional treatment.

Additionally, an option for the Flint WTP to supply the City of Flint without being supplied from either DWSD or KWA was initially considered. The preliminary investigation evaluated the cost associated with the required improvements to the plant and to the Flint River dam system. Although it appeared that this was a viable option, Flint in a meeting on December 20, 2012 with the Treasury, stated that the City did not want to pursue the option and it is no longer being considered.

### ***Karegnondi Water Authority (KWA) Lake Huron Water Supply***

The KWA water supply system schematic is shown in Figure 2-1. The system is comprised of an intake in Lake Huron that supplies water to the Lake Huron Pump Station (LHPS). The LHPS lifts the water and pumps it through an approximately 22 mile long 60-inch pipeline. The pipeline terminates at a 5 MG reservoir and is then pumped from the Intermediate Pump Station (IPS) through approximately 26 miles of 60-inch and 18 miles of 30-inch pipeline to the existing Flint WTP. Downstream of the IPS, approximately half way to the Flint WTP, the 60-inch line would also supply a new Genesee County WTP.

The raw water transmission system has a 60 MGD capacity and is sized to deliver a maximum of 18 MGD to the Flint WTP with an average day supply of 12 MGD. Improvements at the Flint WTP would also be required to treat the lake water as the plant is currently designed to treat the Flint River water.

The term of the KWA contract for Flint is 40 years.

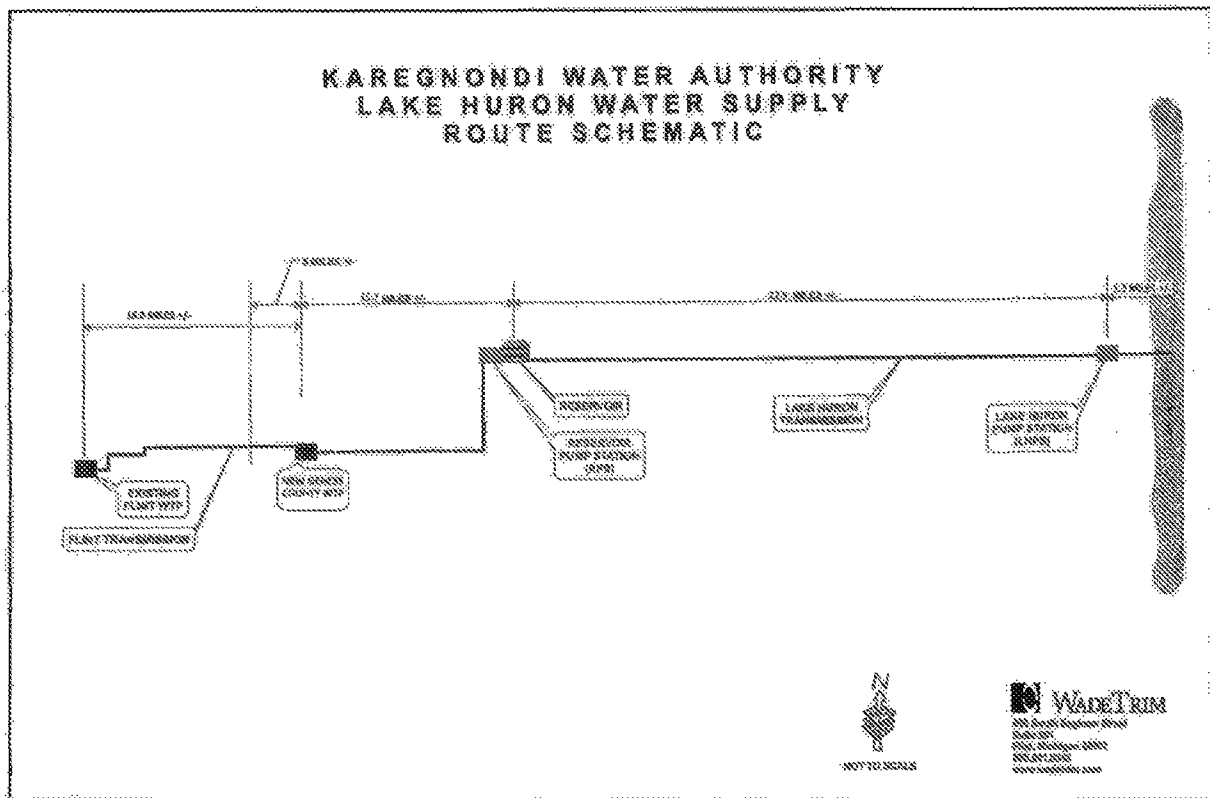
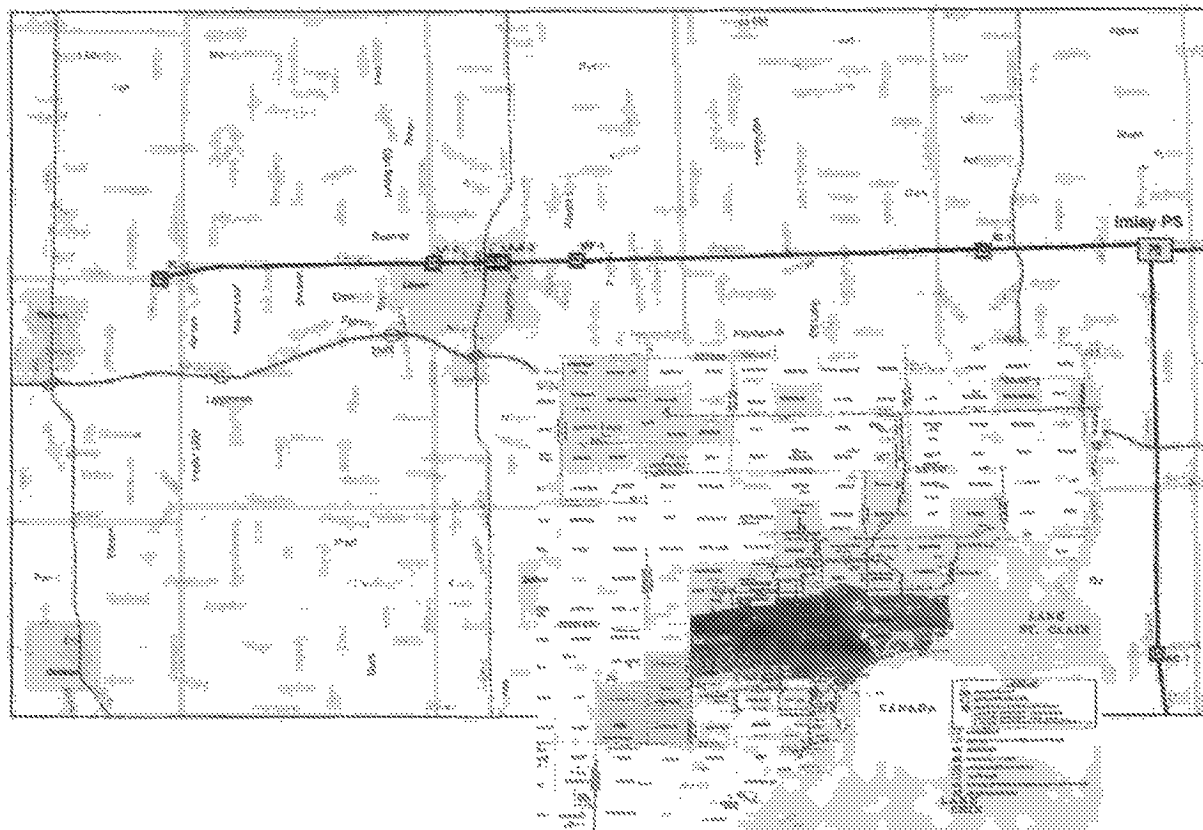


Figure 2-1: KWA Raw Water System

### *DWSD Water System*

The DWSD system schematic is shown in Figure 2-2. Flint is currently supplied by DWSD at Master Meter FL-1, located at Potter and Baxter. Flint typically gets its water from the Lake Huron WTP, located in Fort Gratiot, Michigan; near the Lake Huron shoreline. Water is treated and pumped at the Lake Huron WTP and supplied through a 120-inch pipeline to an intermediate pump station called the Imlay Pump Station. The Imlay Pump Station has 20 MG of reservoir capacity. Depending on the time of year and the DWSD system demand, water is either bypassed directly to Flint or it is re-pumped at Imlay. It should be noted that the DWSD supply to Flint is part of a very large water system and during emergencies or outages water can be supplied from the south up to Flint in lieu of the Lake Huron facility.



**Figure 2-2: DWSD Water System**

The pipeline from Imley to FL-1 is a 72-inch pipeline. It has been estimated that the 72-inch line serving Flint has a capacity in excess of 90 MGD.

DWSD has presented several contractual options to Flint and all of them are based on Flint signing a new 30 year contract. The options shown in Table 2-1 are based on two different supply points; one at the current master meter location FL-1 at Potter and Baxter (P&B) and the other at the location of the Imley Pump Station. The reason for the varying options is to provide a lower water rate at the Imley Station, since the DWSD rate formula is based on distance and elevation factors related to the supply location.

The rates are also dependent on the maximum amount of water DWSD supplies. As example, if DWSD supplies a maximum day demand of 18 MGD that would equal the entire amount of water required by Flint.

For the options less than the maximum of 18 MGD means that the Flint WTP would supplement the difference by supplying water treated from the Flint River. These options are known as "blending" and would allow for Flint to blend two sources of water to supply its customers; the Flint River using the Flint WTP and Lake Huron from DWSD system.

Description	Average Day Demand
18 MGD Maximum Day Customer – FL-1	12 MGD
12 MGD Maximum Day Customer – FL-1	8 MGD
8 MGD Maximum Day Customer – FL-1	8 MGD
12 MGD Maximum Day Customer - Imlay	12 MGD
8 MGD Maximum Day Customer - Imlay	12 MGD

**Table 2-1: DWSD Supply Options**

### ***3. DATA COLLECTION***

During the course of the investigation several documents were used to perform the analysis. The names of the documents are listed below for reference.

#### KWA and Flint

- Preliminary Engineering Report, Lake Huron Water Supply Karegnondi Water Authority, September 2009;
- Analysis of the Flint River as a Permanent Water Supply for the City of Flint, July 2011;
- Cost Comparison, KWA vs. DWSD, Letter to Mr. Kurtz, October 31, 2012;
- Lake Huron Supply Study, KWA, Appendix 20, October 2012 Preliminary Report Update, Final Report (DRAFT), October 4, 2012;
- Articles of Incorporation of Karegnondi Water Authority, endorsed in 2010;
- Karegnondi Water Authority Bylaws, October 26, 2010;
- KWA Raw Water Supply Contract;
- Flint WTP Statement of Revenues and Expenditures 09' – 12';
- GCDC Division of Water and Waste Services Financial Statements 03' – 11'; and
- Assorted emails with further clarification of questions and documentation.

#### DWSD

- Historical Rates and Charges to Flint 04' – 13';
- Historical Rates and Charges to Flint with Hypothetical Model Contract 10' – 13';
- 2013 Rates and Charges for the following options:
  - 18 MGD Maximum Day Customer at FL-1;
  - 12 MGD Maximum Day Customer at FL-1 (Flint blending\*);
  - 8 MGD Maximum Day Customer at FL-1 (Flint blending\*);
  - 12 MGD Maximum Day Customer at Imlay (Flint blending\*);
  - 8 MGD Maximum Day Customer at Imlay (Flint blending\*); and
- Assorted emails with further clarification of questions and documentation.

- \* Flint blending based on DWSD supplying two-thirds and Flint one-third of 12 MGD average day demand.

Two meetings were also held; one with DWSD and one with Flint and Genesee County representing KWA. The meetings were held on November 19, 2012 and November 20, 2012, respectively. Minutes from these meetings are included in Appendix A.

#### 4. COST OF SERVICE

Information provided by DWSD, Flint, and representatives of the KWA were used in the cost of service evaluation. To evaluate the annual escalation/inflation rate over the planning period, the rate adjustment for DWSD was estimated based on the recent rate adjustment history. For the KWA system both the estimated cost of operations when the system begins supplying water and the annual rate adjustment or inflation was evaluated. The existing cost of operations and escalation for the Flint WTP was based on actual costs provided and then adjusted depending on the scenario considered. This section describes the evaluation process and the rates used in the analysis.

##### *DWSD Water Supply*

The City of Flint has been a customer of DWSD since 1967. The Flint WTP has been maintained as a backup to the DWSD system. As indicated previously, several options were provided by DWSD depending on the type of service Flint was to select. The unit cost of water for each of these options is shown in Table 4-1. These rates are based on DWSD's FY13, which are current until July 2013.

Description	Average Day Demand (MGD)	Unit Cost (\$/MG)
18 MGD Maximum Day Customer – FL-1	12	16.37
12 MGD Maximum Day Customer – FL-1	8	16.31
8 MGD Maximum Day Customer – FL-1	8	12.68
12 MGD Maximum Day Customer – Imlay	12	14.38
8 MGD Maximum Day Customer – Imlay	12	11.11

Table 4-1: Cost of DWSD Supply Options

To determine annual escalation rate, DWSD's last 10 years of history was used along with other large urban water systems in Michigan. The water systems used for benchmarking comparison were: Lansing, Grand Rapids, and Saginaw.

Table 4-2 identifies the annual and average rate of increase to Flint based on supplying water either to the current FL-1 at Potter and Baxter or Imlay. Note the last three years of the rates (FY 2011 through FY 2013) assumes that Flint's cost would be based on the new 30 year contract; FY 2011 being the first year that the new contract was available.

fiscal Year	Average Unit Cost (\$/MG)	Annual Change (%)
2004	11.06	
2005	10.24	-7.4
2006	10.56	3.1
2007	11.09	5.0
2008	11.35	2.3
2009	13.07	15.2
2010	11.73	-10.3
2011	13.89	18.4
2012	15.08	8.6
2013	16.24	7.7
Average		4.5%

From FL-1

fiscal Year	Average Unit Cost (\$/MG)	Annual Change (%)
2004	11.06	
2005	10.24	-7.4
2006	10.56	3.1
2007	11.09	5.0
2008	11.35	2.3
2009	13.07	15.2
2010	11.16	-14.6
2011	12.23	9.6
2012	13.28	8.6
2013	14.32	7.8
Average		5.3%

From Imlay

Table 4-2: Recent DWSD Water Rates



Audited financial reports were used to determine the rate of inflation associated with other three large municipal systems. The results are shown in Table 4-3.

Water System	Years Reviewed	Average Rate (%)
Lansing	05'-12'	4.6
Grand Rapids	04'-11'	1.6
Saginaw	04'-11'	7.0

**Table 4-3: O&M Inflation Rates of Other Large Water Systems**

Based on the information analyzed from DWSD and the other communities, it was determined that a fair annual rate of inflation for operations and maintenance cost for the analysis should be 4.4%. The 4.4% has historical significance from Flint's current water supplier and falls within the range of the other communities.

### ***KWA Water Supply***

The initial projected O&M cost for the KWA supply would be comprised of KWA's O&M costs as well as Flint's O&M costs. Because there was limited information provided, the initial estimated rate of \$1.50/MCF was used. This rate is based on information from the cost comparison analysis attached to the letter to Mr. Kurtz, dated October 31, 2012.

The KWA cost evaluation used an annual O&M inflation rate of 5%. To validate this rate a similar analysis to DWSD's operations and maintenance annual rate of inflation was used. First, in discussions with Flint and the Genesee County Drain Commission (GCDC), they believed that the annual rate of inflation for the new KWA system would be similar to the GCDC Water & Waste Services (WW5). Additionally, two large transmission systems were used to benchmark the inflation rates: the Southeastern Oakland County Water Authority (SOCWA) and the Ypsilanti Utility Community Authority (YUCA). Although both of these systems transmit finished water opposed to raw water, they were considered similar enough for comparison as they are comprised of only large water mains, pumping facilities and storage.

Once again audited financial statements were used to calculate the inflation rates. A summary of the findings are shown in Table 4-4. Based on the fact that the information analyzed showed a large difference between the two systems, it was determined that the KWA assumption of 5% was a good rate of inflation to use in the financial analysis. This rate is almost equally between the GCDC rate and the other two transmission systems.

System	Years Reviewed	Average Rate (%)
GCDC WWS	03' - 11'	10.5
SOCWA	04'-12'	-
YUCA	04'-12'	0.7

Table 4-4: O&M Inflation Rates of Other Comparable Systems to KWA

### ***Flint WTP***

The Flint WTP currently serves as a backup supply to the DWSD service to Flint. To maintain backup operations, the City of Flint operates the plant approximately 20 days each year. Flint indicated that the average production rate when they operate is 11 MGD.

For the blending options and the KWA supply considered, Flint would be required to operate its plant all year around. Therefore, their operating and maintenance costs were evaluated and adjusted to determine an annual cost associated with year-round operations.

The Flint WTP provided three years of operating costs for the assessment. Additionally, reports listed in Section 3 were also used as reference to determine both operating costs for the plant processing Flint River water (blending options) and Lake Huron raw water (KWA option).

Major cost centers were analyzed to estimate annual operation and maintenance. They included: labor, utilities, chemicals and residual management. In general, as recommended by the Flint plant staff, labor and overhead were increased from the current costs by two-thirds. Additionally, variable costs for power, chemicals and residual cost were increased to estimate full time treatment at the Flint WTP. Data from the KWA Preliminary Report and annual operating data for the Flint WTP (provided separately) were analyzed to make these forecasts.

The annual operating and maintenance costs developed for Flint WTP used are shown in Table 4-5.

Source of Supply	Per Year Daily Production (MGD)	Estimated Annual O&M Cost
Flint River (Blending with DWSD)	4	\$5,895,097
Lake Huron (Supplied by KWA)	12	\$7,913,118

Table 4-5: FY 13 O&M Costs for Year-round Operations

It was determined that a fair annual rate of inflation for operations and maintenance cost for the Flint WTP plant should be 4.51%. The 4.51% is an average of Lansing, Grand Rapids and Saginaw facilities.

## 5. CAPITAL REQUIREMENTS

Large capital investments would be required by Flint and GCDC to construct the KWA supply system. Furthermore, some of the options presented by DWSD (supply point from Imlay) would require the purchase by Flint of DWSD's 72-inch water main. Performing the financial analysis; therefore, required an analysis of the KWA construction cost estimate for the transmission system and Flint WTP improvements.

Revenue bonds were also identified as the source of financing the new supply system and associated improvements. This section describes the assumptions made and the interest used for financing the improvements.

### *KWA Supply System*

The most current cost estimate of the KWA system was presented in the document titled; Lake Huron Supply Study, KWA, Appendix 20, October 2012 Preliminary Report Update, Final Report (DRAFT), October 4, 2012. The cost of construction is estimated at \$272,421,558. Flint's portion would be 30% or \$81,726,467.

Due to the significance of this expenditure, a detailed review of the cost was performed and is presented in this section. The analysis was performed based on the main elements of the supply system: the lake intake; the two pumping stations, and the transmission pipeline. Additionally, an analysis was performed related to construction contingencies and other costs such as engineering, legal, and administration.

### **Lake Intake**

KWA representatives indicated in a meeting in November that the design documents for the intake were at 90% and that it was planned for advertisement in January 2013. A summary of the estimate is shown in Table 5-1.

DESCRIPTION	ESTIMATE
Intake and Crib	\$22,076,850
ELAC at 25%	5,519,213
Property	2,300,000
<b>Total</b>	<b>\$29,896,063</b>

Table 5-1: KWA Intake Cost Estimate

Based on the evaluation, it appeared that the cost estimate was reasonable. Given that the design was nearly complete, the engineering, legal, administration, and construction contingencies (ELAC) at 25% were also found to be appropriate.

## Pumping Stations

KWA representatives indicated that the pump stations were estimated at a level of design less than 15%. Therefore, in addition to an evaluation of their cost estimate, other water pumping station costs were used for comparison. Additionally, contractors were also contacted for costs. Table S-2 summarizes the KWA cost estimate compared to our cost estimate performed for the Treasury.

DESCRIPTION	KWA	STATION	TREAS	REMARKS
Pumping Stations		\$24,618,080		\$54,573,314
Land for Intermediate Pump Station and Reservoir		--		75,000
Subtotal		\$24,618,080		\$54,648,314
ELAC for Construction	25%	6,154,520	30%	16,394,494
Total		\$30,772,600		\$71,042,808

Table S-2: Pumping Stations Cost Estimate

Two things to note regarding the difference in the cost estimates; firstly, there is a large difference in the cost estimates of the pumping stations. The estimate developed for the Treasury used several other pumping stations construction costs from Southeastern Michigan and discussions with contractors. These costs were then computed on a \$/MG's for comparison.

Secondly, our estimate for the Treasury is based on an ELAC of 30% instead of KWA's 25%. Although 25% was acceptable for the intake, it is believed to be too low for the pumping station estimate given that the engineering effort is less than 15%.

## Transmission Main

Although the specific route for the transmission main was not provided, an estimate was calculated based on the general information provided. Once again, the KWA estimate was based on a level of design less than 15%. The estimate performed for the Treasury used the line items provided by KWA for the pipeline and also consulted with contractors to evaluate the cost of construction. The comparison is shown in Table S-3.

Although the cost of construction of the pipeline is similar, a value of 30% was used for ELAC due to the level of design. Additionally, KWA did not believe there would be any additional costs for easements; however, this did not seem practical. Therefore an estimate for acquiring the easements was added to the Treasury estimate and is based on the 277 easements identified by KWA. The cost shown includes surveying, legal, engineering, administration, etc.

Description	KWA	Estimate	TYJT	Estimate
Transmission Mains		\$166,202,316		\$167,419,530
ELAC for Construction	25%	41,550,579	30%	50,225,859
Subtotal		\$207,752,895		\$217,645,389
Easements		--		1,166,170
<b>Total</b>		<b>\$207,752,895</b>		<b>\$218,811,559</b>

Table 5-3: Transmission Pipeline Cost Estimate

### Other KWA Costs

In prior estimates of the construction cost, KWA used an ELAC of 37%. In this case it could be considered that the engineering effort associated with the design would have been included. However, it is believed that KWA's reduced ELAC of 25%, does not include the design effort. Additionally, it would be prudent to assume that the owner would want a construction manager during construction of this large project. A summary of these costs are shown in Table 5-4.

Description	Estimate
Design Engineering for Pumping Stations and the Transmission Pipeline	\$16,939,581
Construction Management at 5% of Project Cost Estimate of \$217,645,389	14,434,609
Administration	349,440
Legal, Easements, Contract Documents	831,000
<b>Total</b>	<b>\$32,554,630</b>

Table 5-4: Other Costs

### Summary Comparison

A summary of the two cost estimates are shown in Table 5-5. Based on the comparison, the estimate performed by TYJT shows a higher cost to Flint by approximately \$25,000,000.

Note that there are two other costs shown in the summary that were not previously addressed; power and backup power. Regarding the cost of providing power to the pumping facilities, the cost of \$4,000,000 appears reasonable.

The KWA has repeatedly indicated that backup power is not needed. Backup power is a standard practice in the water industry. Furthermore, a loss of power at either pumping facility will prevent the supply of water to both Flint and Genesee County. For these reasons, the cost of providing backup power was included in our estimate for the Treasury.

Description	KWA Estimate	FGT Estimate
Intake/Crib	\$ 27,596,063	\$ 27,596,063
Pump Stations	30,772,600	71,042,808
Transmission Mains	207,752,895	217,645,389
Power	4,000,000	4,000,000
Redundant Power for PS		1,273,200
Land for Lake Huron Pumping Station	2,300,000	2,300,000
Design Engineering/PS and Transmission		16,939,581
Construction Management		14,434,410
Administration		349,440
Legal/Easement/Contract Documents		831,000
Easements		1,166,170
<b>Total</b>	<b>\$ 272,421,558</b>	<b>\$ 357,578,060</b>
<b>Flint Share at 30%</b>	<b>\$81,726,467</b>	<b>\$107,273,418</b>

Table 5-5: Total Cost Comparison

### *Flint WTP Improvements*

The KWA analysis identified capital costs required to convert the existing WTP from river water treatment to treating lake water. The cost estimate was identified as \$7,100,000 in the 2009 report. This number was used in the our analysis, since additional information was not provided. For the purpose of the financial analysis; however, the \$7,100,000 was increased by 3% each year for three years to account for inflation.

### *DWSD Imlay Station Supply Options*

The options identified by DWSD to supply service to Flint at the Imlay Pump Station would require Flint to purchase the 72-inch water main from Imlay to Master Meter, FL-1. The pipeline is approximately 25 miles long. The estimated cost provided by DWSD for estimating purposes is \$4,700,000.

### *Financing*

The cost of financing the revenue bonds for the capital work was investigated. Based on conversations with local financial advisors knowledgeable in bond financing, an interest rate of 5% for the 25 year

period was considered acceptable. This is based on a Standard and Poor's bond rating of A without insurance.

Additional costs associated with the bond include the reserve and bond issuance fee. The bond holders will require a reserve of approximately 10% of the loan to be held for the 25 year payment period. The cost associated with the bond issuance has been estimated at 2.25% of the principal borrowed for the KWA project and 3% for the smaller loan associated with the Flint WTP improvements or the purchase of the 72-inch main.

Furthermore, since no revenue will be generated to pay on the bonds for the first three years that the system is being constructed, the cost associated with capitalizing the interest was also included.

Finally, interest on the reserve will be provided back to KWA and Flint. Although the interest is currently less than 1%, it was determined that a 3% rate would be more prudent long-term.

## 6. FINDINGS

Using the information described in the previous sections, a cost evaluation was conducted for the KWA supply and the DWSD options. Individual worksheets for each option are provided in Appendix 8. For the purpose of comparison a 30 year period was used. This period includes the 3 year construction period, the 25 loan period and an additional two years to get a sense of the cost of operation after the loans have been paid.

There were three separate cost sheets prepared for the KWA option. The first cost sheet (KWA) is based on the cost estimate provided by KWA. The costs provided assumed no overruns or delay in construction. With KWA's own assumptions of an overrun in construction of 15% and a one year delay in operations, the KWA estimated cost becomes \$686,375,920 through Year 2042.

Since this cost estimate did not appear to include the financing of revenue bonds, another cost sheet (KWA-1) was developed that included KWA's cost estimate without overruns with the additional finance costs associated with the revenue bonds. A final cost sheet (KWA-2) includes the cost associated with the revenue bonds based on the estimate provided by TYJT for the Treasury.

A summary of the cost sheets provided in Appendix 8 are shown in Table 6-1. Figure 6-1 shows the cumulative annual costs associated with each option.

Option	Cost through 2042 (\$)	Ranking by Cost
DWSD 8 MGD Maximum Day at Imlay Station	634,795,488	1
KWA (10/31/12 No Overruns, As Provided)*	649,775,166	2
DWSD 8 MGD Maximum Day at FL-1	672,671,705	3
KWA-1 (10/31/12 No Overruns with Cost of Financing)	707,279,715	4
DWSD 12 MGD Maximum Day at Imlay Station	725,576,803	5
DWSD 12 MGD Maximum Day at FL-1	762,110,308	6
KWA-2 (Treasury Estimate)	766,784,313	7
DWSD 18 MGD Maximum Day at FL-1	821,226,268	8

\* \$686,375,920 with 15% overrun in construction and a one year delay in operations

Table 6-1: Total Cost of Options through 2042

Based on the analysis, it is prudent to assume the KWA water supply option costs would be somewhere between the KWA-1 and KWA-2 options. Therefore, the analysis indicates that the two DWSD options of supplying 8 MGD on a maximum day and up to 8 MGD on average are the least cost options for Flint. These options allow Flint to maximize the use of existing assets; the City of Flint's (the Flint WTP) and DWSD's (the existing 72-inch main).

Additionally, in recent conversations with the Treasury another option was discussed that could potentially be the most cost-effective solution. Currently the Flint WTP serves as a backup if service is



lost through either the DWSD or KWA pipeline. If the a twin pipe paralleling the DWSD 72-inch water main were constructed with interconnects with the 72-inch line, then the new water main could serve as the backup to Flint and the Flint WTP could be abandoned or potentially sold to Genesee County for their use.

The construction of the parallel pipeline would be considered in the DWSD capital expenditure as a Common to All (CTA) cost. This means that the capital cost of the pipeline would be shared by all DWSD customers and not just by Flint. Preliminary analysis of this option appears to be the most cost-effective of all the options discussed. However, a more thorough cost analysis is warranted and this approach would require an agreement between Flint and DWSD.

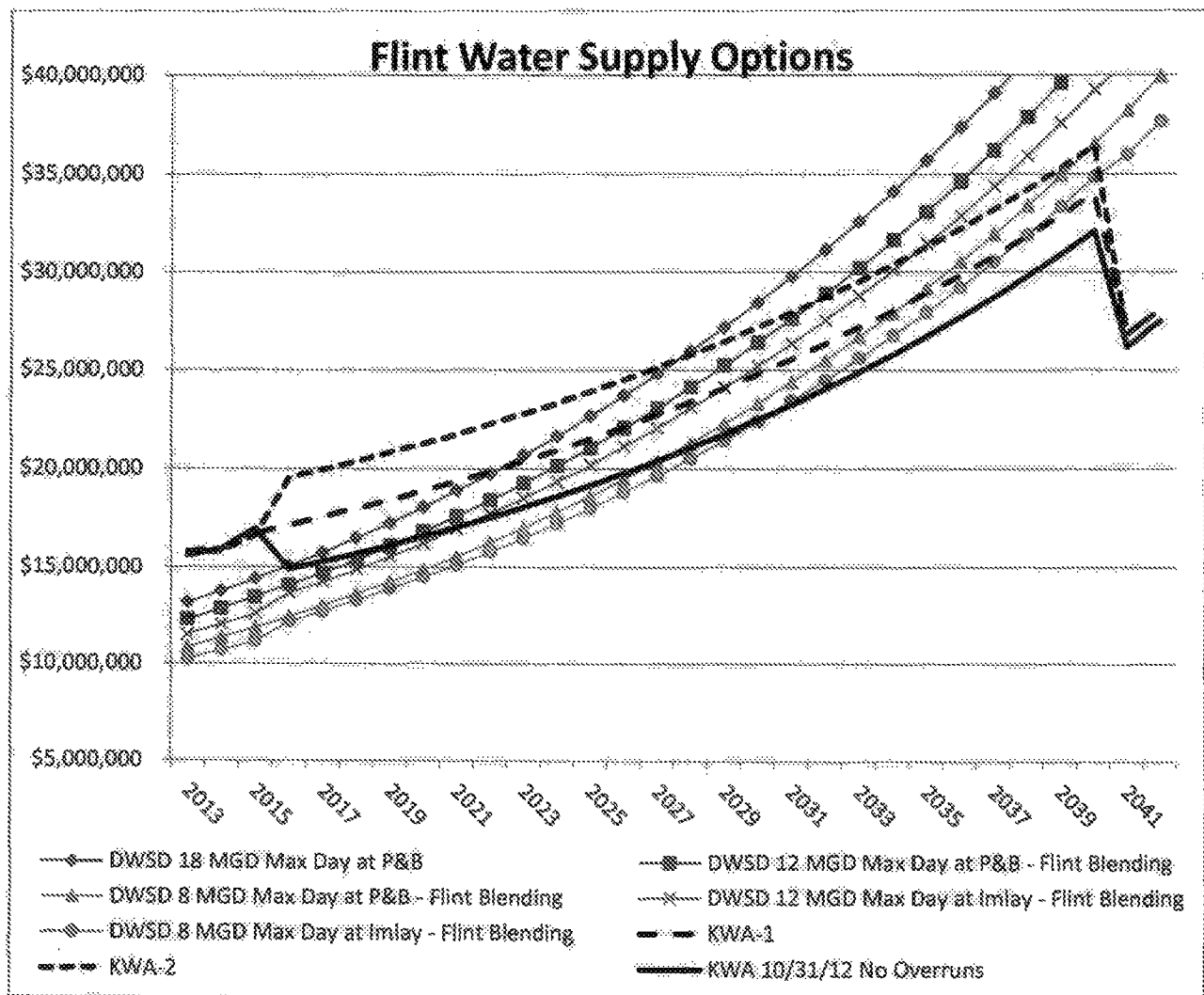


Figure 6-1: Flint Water Supply Options through 2042

## ***7. OTHER CONSIDERATIONS***

As part of the investigation other issues were identified that may result in risks to Flint that should be considered by the Treasury in determining how Flint's potable water should be supplied. These issues are related to redundancy and reliability, other items affecting cost, and Flint's desire to control its own destiny related to its water supply. These are described further below.

### ***Redundancy/Reliability***

In one of the first meetings related to this task assessment, which was held on November 1, 2012, the Genesee County Drain Commissioner, Mr. Jeff Wright, stated that one of the main reasons for pursuing the KWA supply option related to the lack of reliability of the DWSD system. He pointed to the Northeast blackout of 2003; a widespread power outage that occurred throughout parts of the Northeastern and Midwestern United States and Ontario, Canada, on Thursday, August 14, 2003. He stated that Flint and Genesee County were out of water for several days.

It is worth noting that this was a power outage of historic proportions that affected millions of Americans. However, DWSD did begin supplying water again relatively quickly in comparison to other major cities impacted by the same power outage.

Furthermore, the KWA supply system offers less redundancy to Flint than the current DWSD system. Under both options, Flint is supplied by a single pipeline; however, DWSD has backup power at all of its major facilities supplying Flint. The KWA system will not have a redundant power at its pumping facilities. This would be a major risk.

Currently, backup to the DWSD system for Flint is Flint's WTP using the Flint River as the source of supply. KWA has stated that the Flint River source would also be used as backup to Flint if the KWA supply through its pipeline was lost. However, since the Flint WTP would be upgraded to treat Lake Huron water under the KWA option, using the Flint River as a backup source would require the Flint WTP to maintain two process treatment streams.

In addition to Flint and Genesee County, the DWSD's 72-inch main supplies Imlay City, Mayfield and the Greater Lapeer County Utilities Authority (GLCUA). The volume of water contained within the 72-inch main is approximately 30 MG. Only supplying these three remaining communities would cause the water age to increase dramatically; somewhere in excess of three weeks old, before reaching the customers' master meters. Since the half-life of chlorine in the DWSD system is approximately 5 days, the chlorine would most probably be near zero requiring re-chlorination of the finished water upstream of the master meters.

Re-chlorinating is a costly and risky process due to the instability of chlorine gas. It is unknown whether DWSD would pursue this improvement or possibly abandoned the 72-inch pipeline.

If Flint is supplied by the KWA system, then DWSD supplying their other customers along the 72-inch water main may be reconsidered. Since the KWA system is a raw water supply, the communities would

either have to build a treatment facility to treat the water from KWA or find another water source for their communities.

### ***Additional Cost and Risk Considerations***

The design of the KWA supply and the construction of the system have not been completed; therefore, final costs and time to complete are unknown. Cost overruns and delays in completion will both negatively impact Flint's final cost. As example, if the project is not completed within the three year period, payment on the bonds will be due, but the revenue source needed from the sale of water could not be provided.

Furthermore, there is always a risk with large water system construction; especially those including an intake in the Great Lakes, pumping stations and rehabilitation of older water treatment plants. These risks include the potential of explosive gases in tunneling below Lake Huron, changing site conditions associated with the large number of miles of pipe installation and rehabilitating an older WTP, and the startup and debugging of the entire pumping system.

Flint has indicated that they have a high water loss. Not addressing this issue prior to sizing the Flint supply pipeline from KWA could cause the water main to be oversized along with its incremental cost in construction.

Also, the KWA supply option appears to run counter to the Treasury's Competitive Grant Assistance Program (Formerly EVIP Grant). This program has been put in place to allow for communities to consolidate their services and save money. Two existing customers of DWSD (Flint and Genesee County) along with the potential of others customers (GLCUA, Mayfield, Imlay City) separating to from another water system is in contradiction to the program.

Finally, there is a concern over the ability of smaller systems (KWA) over larger systems (DWSD) to pay for future unfunded mandates and regulations. Obviously, identifying regulation requirements over 30 years is hard to determine. However, it is widely accepted that a large system has greater ability to respond to unfunded mandates because the cost can be distributed over a large customer base.

### ***Flint's Autonomy***

Flint has indicated that a major point of consideration is that they have no control over the rate increases issued to Flint by DWSD. All other counties supplied by DWSD have representatives on the Board of Water Commissioners (BOWC). The BOWC is one of the governing bodies that approve the water rates. Since Flint and Genesee County do not have a representative on the BOWC, Flint believes they are held "hostage" to DWSD's rates and cost of service.

This issue was stated in Flint's handout at the November 1, 2012 meeting. The handout is titled, "Flint Water Supply Future." However, it is worth noting in the same handout, Flint also identifies similar concerns with the governing board of the KWA system. Notably, that although Flint and Genesee County will be the only customers and Flint will be responsible for 30 percent of the construction cost,

they will have a minority vote on the KWA board. Furthermore, there are other communities (Lapeer County, the City of Lapeer, and Sanilac County) that sit on the board and vote. However, they are not purchasing water nor contributing to the construction costs.

STATE OF MICHIGAN CONTRACT NO. 271N3200089

CITY OF FLINT WATER SUPPLY ASSESSMENT

State of Michigan, Department of Treasury

**Appendix A: Meeting Minutes**

## MEETING MINUTES

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**IN ATTENDANCE:** Sue McCormick, DWSD Director  
Darryl Latimer, DWSD Deputy Director  
George Karmo, TYJT  
Awni Qaqish, TYJT  
Dave Guastella, TYJT

**DATE:** November 24, 2012

**PURPOSE OF MEETING:** Meeting with DWSD for the Indefinite-scope, Indefinite-delivery Contract Number 00383, 2012 Professional General Architectural/Engineering Services -- City of Flint Water Supply Assessment

**PREPARED BY:** Dave Guastella

A meeting was held at the DWSD Main Office Building on November 19, 2012 to discuss the water supply options being presented by DWSD to the City of Flint. The main items discussed generally followed the attached DWSD Discussion/Questions that were provided to the Department prior to the meeting. A summary of the key points discussed are provided below.

### DISCUSSION ITEMS

1. Question/Discussion Item: Verify that the four options presented at the November 1, 2012 meeting are still available for consideration:
  - a. Supplied from Potter & Baxter using the new model contract (assume a Maximum Day Customer),
  - b. Supplied from Imlay Station,
  - c. Finished un-pumped supply from Lake Huron WTP, and
  - d. Raw un-pumped supply from Lake Huron WTP.

*DWSD prefers to focus on the first two supply point listed; from the current location at Potter & Baxter and at the Imlay Pump Station as these apply specifically to Flint.*

*DWSD provided the attached summary regarding the current costs to Flint based on the various options that DWSD is offering. The savings associated with each option is provided as well. As example, if Flint were to purchase water from the supply point located at Imlay Station, the current cost to Flint would be \$5,661,000 and it would be a savings of nearly 50%*

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*compared to Flint's current rate.*

2. Question/Discussion Item: What additional capital improvements will be required for each option?

*If Imlay Pump Station is selected as the supply point then Flint would need to purchase the 72-inch water main and an agreement to supply Lapeer would need to be worked out. DWSD believes that this could be worked out through a "wheeling" charge over the 72-inch main or possibly moving the supply point downstream of the Lapeer connection.. DWSD estimates the value of the water main at \$4.7M. Flint could bond for this amount or DWSD could include the cost into Flint's rate.*

3. Question/Discussion Item: Are there other options being presented that should be considered (e.g., blending)?

*Only the two options indicated above are currently being considered and both would include blending; DWSD providing 2/3 of the supply and the Flint WTP providing the other 1/3.*

4. Question/Discussion Item: To evaluate each option over the 25 year planning period, provide:
- Annual water rate for Flint for 2002 through 2012, and the
  - Projected annual rate adjustment for each option. What are the proposed measures to keep the rate adjustments down in the future?

*DWSD provided the attached historical rates from 2002 through 2012 for the existing water contract with Flint. The attachment also includes what the rates would have been if Flint had signed the new model contract or had taken service from Imlay. These rates were provided back to 2010.*

*DWSD believes that 5% would be a good estimation to assume for their annual escalation in rates over the 25 year planning period.*

5. Question/Discussion Item: Flint stated a 10% increase in the capacity charge. What number did DWSD provide Flint?

*It was unclear to DWSD where the 10% increase in capacity charge stated by Flint came from. DWSD's information provided shows an average of 6.3%. DWSD offered a meeting with TYJT to discuss how the fixed and commodity charges are allocated.*

6. Question/Discussion Item: Flint financial comparison is based on the initial Cost of \$14,413,858, which includes \$2,725,538 for Flint WTP operating cost; i.e, DWSD charge is \$11,688,320. How good is this number?

*DWSD indicated that the charge of \$11,638,320 is good through 6/30/13.based on their existing contract with DWSD.*

7. Question/Discussion Item: KWA's initial charge to Flint is based on 12 MGD. Is DWSD charge

*Comments: Meeting minutes were recorded based on the understanding of the author. Please contact the author within three days if you have any different understanding of the meeting. These minutes will be considered approved unless comments are provided within three days.*

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based on 12 MGD?

*Yes, 12 MGD from DWSD would be a maximum with Flint supplying 6 MGD for a total of 18 MGD (2/3 vs. 1/3).*

Comments: Meeting minutes were recorded based on the understanding of the author. Please contact the author within three days if you have any different understanding of the meeting. These minutes will be considered approved unless comments are provided within three days.



**Indefinite-scope, Indefinite-delivery Contract Number 00383  
2012 Professional General Architectural/Engineering Services**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

DWSD Discussion/Questions for the November 19, 2012 Meeting

1. Verify that the four options presented at the November 1, 2012 meeting are still available for consideration:
  - c. Supplied from Potter & Baxter using the new model contract (assume a Maximum Day Customer),
  - d. Supplied from Imlay Station,
  - e. Finished un-pumped supply from Lake Huron WTP, and
  - f. Raw un-pumped supply from Lake Huron WTP.
2. What additional capital improvements will be required for each option?
3. Are there other options being presented that should be considered (e.g., blending)?
4. To evaluate each option over the 25 year planning period, provide:
  - g. Annual water rate for Flint for 2002 through 2012, and the
  - h. Projected annual rate adjustment for each option. What are the proposed measures to keep the rate adjustments down in the future?
5. Flint stated a 10% increase in the capacity charge. What number did DWSD provide Flint?
6. Flint financial comparison is based on the initial Cost of \$14,413,858, which includes \$2,725,538 for Flint WTP operating cost, i.e DWSD charge is \$11,688,320. How good is this number?
7. KWA's initial charge to Flint is based on 12 MGD. Is DWSD charge based on 12 MGD?

Summary of DWSD Cost Allocations to Flint Under Various Scenarios  
**Flint Only**

	Revenue	Rates and Charges		
	<u>Requirement</u>	<u>Fixed</u>	<u>Commodity</u>	<u>Avg Unit Cost</u>
1 <b>Status Quo</b>	11,461,700	357,271	12.46	19.91
2 <b>Model Contract</b>	9,732,100	275,517	11.16	16.90
3 <b>Change</b>	(1,729,600)	(81,754)	(1.30)	(3.00)
4 <b>% Change</b>	-15.1%	-22.9%	-10.4%	-15.1%
5 <b>Max Day Only</b>	9,424,700	271,010	10.72	16.37
6 <b>Change</b>	(307,400)	(4,507)	(0.44)	(0.53)
7 <b>% Change</b>	-3.3%	-1.7%	-4.1%	-3.3%
8 <b>Allow Blending</b>	6,302,800	182,369	10.72	16.42
9 <b>Change</b>	(3,121,900)	(88,641)	0.00	0.05
10 <b>% Change</b>	-49.5%	-48.6%	0.0%	0.3%
11 <b>Imlay City Connections</b>	5,800,700	170,912	9.77	15.11
12 <b>Change</b>	(502,100)	(11,457)	(0.95)	(1.31)
13 <b>% Change</b>	-8.7%	-6.7%	-9.7%	-8.7%
14 <b>Cumulative Change</b>	(5,661,000)	(186,359)	(2.69)	(4.80)
15 <b>Cumulative %Change</b>	-49.4%	-52.2%	-21.6%	-24.1%

	Assumptions					
	Avg Day	Max Day	Peak Hour	Distance	Elevation	Sales
	<i>mgd</i>	<i>mgd</i>	<i>mgd</i>	<i>miles</i>	<i>feet</i>	<i>mgd</i>
1 <b>Status Quo</b>	11.8	21.6	22.6	52.0	866	<b>11.8</b>
2 <b>Model Contract</b>	11.8	<b>17.9</b>	<b>18.8</b>	52.0	866	11.8
3 <b>Max Day Only</b>	11.8	17.9	<b>17.9</b>	52.0	866	11.8
4 <b>Allow Blending</b>	7.9	<b>11.9</b>	<b>11.9</b>	52.0	866	7.9
5 <b>Imlay City Connections</b>	7.9	11.9	11.9	<b>45.2</b>	<b>866</b>	7.9

## Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<i>Hypothetical Model Contract</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		13.96	13.96			6.8%	
2011	145,918	13.74	15.28		-1.6%	9.5%	
2012	378,968	12.58	16.57	159.7%	-8.4%	8.4%	
2013	597,323	11.63	17.93	57.6%	-7.6%	8.2%	5.5%

## Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<i>As Charged</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<i>Hypothetical Model Contract - Flint Only</i>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		11.73	11.73			-10.3%	
2011	70,060	12.45	13.89		6.1%	18.4%	
2012	175,882	11.47	15.08	151.0%	-7.9%	8.6%	
2013	272,923	10.65	16.24	55.2%	-7.1%	7.7%	4.4%

# Recent DWSD Water Rates to Flint

FY	Rates and Charges			Annual Change			Average
	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Fixed \$/mo	Commodity \$/Mcf	Avg Unit Cost \$/Mcf	Annual Change
<u>As Charged</u>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		14.32	14.32			9.6%	
2011	182,301	14.29	16.01		-0.2%	11.8%	
2012	443,096	13.36	17.53	143.1%	-6.5%	9.5%	
2013	707,000	12.46	19.12	59.6%	-6.7%	9.1%	6.3%
<u>Hypothetical Model Contract - Flint Only @ Imlay</u>							
2004		11.06	11.06				
2005		10.24	10.24			-7.4%	
2006		10.56	10.56			3.1%	
2007		11.09	11.09			5.0%	
2008		11.35	11.35			2.3%	
2009		13.07	13.07			15.2%	
2010		11.16	11.16			-14.6%	
2011	65,919	10.88	12.23		-2.5%	9.6%	
2012	165,275	9.89	13.28	150.7%	-9.1%	8.6%	
2013	255,580	9.09	14.32	54.6%	-8.1%	7.8%	2.9%

TFG

## MEETING MINUTES

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**IN ATTENDANCE:** Ed Kurtz; Flint Emergency Financial Manager, City of Flint  
Dayne Walling; Mayor, City of Flint  
Mike Brown, City of Flint  
John O'Brien, Genesee County  
Howard Croft, City of Flint  
Dwayne "Duffy" Johnson, City of Flint  
Brent Wright, City of Flint  
Awni Qaqish, TYJT  
Dave Guastella, TYJT

**DATE:** November 24, 2012

**PURPOSE OF MEETING:** Meeting with the City of Flint for the Indefinite-scope, Indefinite-delivery Contract Number 00383, 2012 Professional General Architectural/Engineering Services – City of Flint Water Supply Assessment

**PREPARED BY:** Dave Guastella

A meeting was held at the City of Flint Municipal Center on November 20, 2012 to discuss the water supply option being presented by the Karegnondi Water Authority (KWA) to the City of Flint. The main items discussed generally followed the attached KWA Discussion/Questions that were provided to City prior to the meeting. A summary of the key points discussed are provided below.

The questions submitted are repeated in the Discussion Items for easy reference. A summary of the action items generated from the meeting follow the Discussion Items.

### DISCUSSION ITEMS

1. Question/Discussion Item: Is the maximum day demand of 18 MGD for Flint the maximum day demand (MDD) throughout the 25 year planning period? If not, what is the 25 year projected MDD?

*KWA would supply up to 18 MGD. 18 MGD has been assumed as the maximum day demand and 12 MGD is assumed as the average day demand throughout the 25 year planning period.*

2. Question/Discussion Item: Copy of the intake contract documents and engineer's estimate.

The intake contract documents are approximately 90% complete and are not available for distribution. However, the updated Appendix 20, dated October 4, 2012 includes the most recent cost estimate of the intake based on the current design in process.

Comments: Meeting minutes were recorded based on the understanding of the author. Please contact the author within three days if you have any different understanding of the meeting. These minutes will be considered approved unless comments are provided within three days.

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3. Question/Discussion Item: Documentation of the Flint WTP improvements required and cost estimate.

*The costs are approximately \$7M as presented in the September 2009 Preliminary Engineering Report. However, this estimate has been updated. Some processes have been eliminated. John O'Brien will provide the updated costs and the description of the planned improvements to the plant.*

4. Question/Discussion Item: Confirm Flint's allocated percentage of the KWA capital improvements (30%?).

*Yes, the allocation is based on 18 MGD/60 MGD total capacity.*

5. Question/Discussion Item: Copy of the proposed KWA operating agreement for Flint.

*John O'Brien will provide the operating agreement as well as the Capacity Contract and Articles of Incorporation.*

6. Question/Discussion Item: What is the annual operating agreement adjustment projected for the 25 year planning period?

*This information is provided in Appendix 14, Table 14.2 of the September 2009 Preliminary Engineering Report. Operating cost based on Table 1. Used 12 MGD as average day demand (ADD). Assumed 5% as the annual increase in operating costs. John O'Brien indicated that these operating costs were based on Genesee County's operating costs. John O'Brien will provide the last 10 years of audited financial statements for the water fund.*

*To assess operating and maintenance costs for the Flint WTP, Duffy will provide multiple years of financial statements for the water fund. Duffy did not believe they had 10 years, but they will provide what they have.*

*Regarding operation and maintenance costs, Flint believes that these costs will increase by 2/3 of what they are now.*

7. Question/Discussion Item: Need the route of the pipelines and the locations of the facilities proposed. Purpose is to identify constraints that impact costs (i.e., utilities, environmental (e.g. wetlands), easements, etc.).

*KWA will not release the route due to concerns regarding speculation of land and easements. John O'Brien did indicate that the Lake Huron pump station would be at Fisher and M-25. The intermediate pump station site is near a location of the Lapeer/Sanilac/St. Clair border; where all three meet.*

8. Question/Discussion Item: KWA's initial charge to Flint is based on a 12 MGD average day demand. What is the basis of this number? Are there population projections and water use figures available that were used to determine the Flint demand for the 25 year planning period?

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*This was answered in Question No. 1 above.*

9. Question/Discussion Item: Is there a transition plan and cost during construction of the KWA system identified?

*Flint is looking for an agreement with DWSD for back-up supply from the 72-inch main at the Genesee border.*

10. Question/Discussion Item: The October 4, 2012 Preliminary Engineering Report Update states: "no backup power is planned for the pumps" (LHPS) and "No backup power is planned for pumping" (IPS). In case of power loss, how would Flint supply its customers?

*Flint indicated that they have adequate storage to supply the system for 6 to 7 days. Flint has 55 MG of storage and Genesee County has 65 MG for 2.5 days.*

11. Question/Discussion Item: The latest plan shows only a 5 million gallon ground reservoir is planned for balancing between LHPS and IPS. How is redundancy maintained?

*In cases of emergency, Flint indicated that the back-up for the KWA system will be the same as it is now with DWSD; they will use the Flint River as the source water. Flint currently operates their plant four times a year.*

*When questioned as to whether the WTP will be able to treat both lake water from the KWA system and river water Flint indicated that once the improvements identified in the September 2009 Preliminary Engineering Report are completed they will be able to accomplish both treatment processes. Flint will provide a schematic of the treatment trains at the WTP and a copy of the Flint transmission system.*

*Genesee County indicated that additional redundancy would also be provided from the new Genesee County WTP.*

*Regarding hydraulic transients; Genesee County indicated that a model analysis has not been included, but capital costs for mitigating transients have been included.*

12. Question/Discussion Item: Related to the construction cost:

- a. Does it include an additional traffic lane since the construction will occupy half the right of way? *Not required, all roads are county roads; however, there are a few State road crossings.*
- b. Does it include costs/fees for permit requirements such as inspection cost by the jurisdictional authorities? As a point of reference, the permit fee costs for the Flint Transmission System came out to be \$5.8 million. *Not required; all of the counties have waived any fees.*
- c. Does the cost of the steel pipe segments include corrosion protection measures such as

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anode stations and related O&M? Yes; however, the KWA has not settled on using steel pipe. PCCP pipe may be used. Steel shown in estimate because it is highest in cost and therefore the pricing is conservative.

d. SCADA monitoring stations require power. Is the cost of bring power to the SCADA stations included? Again, as a point of reference for the Flint Transmission System we estimated \$800,000 for power to SCADA and valve operators. Yes, Genesee County did emphasize that the SCADA system will be simple and straightforward because a lot of controls are not required.

e. Other items discussed at the meeting included:

- The 2009 plant improvement cost is still good; however, there will be some reduction, such as a sulfuric chloride feed system that was eliminated. Plant capacity now is 36MGD, but will be 18 MGD.
- The KWA Lake Huron Pumping Station (LHPS) is now only high lift pump station.
- Genesee County will provide the distance of the intake pipe from the crib to the LHPS.
- The intake project is almost ready to bid; waiting for the COE permit.
- Genesee County is estimating the construction for the pipe lines and pump stations will begin July 2013.
- The route has been flown for survey.
- Genesee County is estimating construction will be complete and the project will be placed in service by Jan 2016.
- Genesee County to provide a list of assumptions that the \$272 million cost estimate is based on since the route is now known.

13. The Flint River is identified as a backup: At what capacity? MDD or emergency supply?

*The Flint River would serve as a back up supply.*

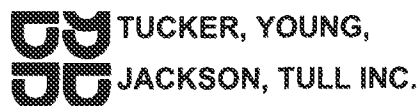
14. Where did the 40 years come from (Flint hostage to Detroit)? DWSD's new contracts are 30 years with openers to revise terms of supply (volume and pressure) after the first two years, then three years, and then in five year increments thereafter.

*The 40 years was stated in error. The reference was to DWSD's requirement to sign a 30 year contract.*

*After 40 years Flint will own 30% of the project and can sell their share of ownership if they want. Conversely, with DWSD, they continue to pay for the capital projects but have no ownership. Flint believes they will know what they will be charged for the next 25 years versus DWSD that can't commit to a fixed escalation.*

<b>Action Items for Follow-up</b>		
<b>Items:</b>	<b>Assigned To:</b>	<b>Date to Complete</b>
1. Updated Costs for the Flint WTP Improvements and a description of the improvements.	John O'Brien	11/21/12
2. KWA Operating Agreement, Capacity Contract and Articles of Incorporation.	John O'Brien	11/20/12
3. Provide the last 10 years of audited financial statements for the Genesee water fund.	John O'Brien	11/20/12
4. Provide multiple years of financial statements for the City of Flint water fund.	Duffy Johnson	11/26/12
5. Provide schematic of the Flint WTP and a map of the Flint transmission system.	Brent Wright	11/26/12
6. Provide the length of the intake pipe from the crib to the pump station.	John O'Brien	11/20/12
7. Provide a list of assumptions that the \$272 million cost estimate is based on since the route is now known.	John O'Brien	11/26/12

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JACKSON, TULL INC.  
CONSULTING ENGINEERS-PLANNERS  
565 E. Larned Suite 300  
Detroit, Michigan 48226  
(313)963-0612 FAX (313)963-2156

**Indefinite-scope, Indefinite-delivery Contract Number 00383  
2012 Professional General Architectural/Engineering Services**

**CITY OF FLINT WATER SUPPLY ASSESSMENT**

**KWA Discussion/Questions for the November 20, 2012 Meeting**

1. Is the maximum day demand of 18 MGD for Flint the maximum day demand (MDD) throughout the 25 year planning period? If not, what is the 25 year projected MDD?
2. Copy of the intake contract documents and engineer's estimate.
3. Documentation of the Flint WTP improvements required and cost estimate.
4. Confirm Flint's allocated percentage of the KWA capital improvements (30%?).
5. Copy of the proposed KWA operating agreement for Flint.
6. What is the annual operating agreement adjustment projected for the 25 year planning period?
7. Need the route of the pipelines and the locations of the facilities proposed. Purpose is to identify constraints that impact costs (i.e., utilities, environmental (e.g. wetlands), easements, etc.).
8. KWA's initial charge to Flint is based on a 12 MGD maximum day demand. What is the basis of this number? Are there population projections and water use figures available that were used to determine the Flint demand for the 25 year planning period?
9. Is there a transition plan and cost during construction of the KWA system identified?
10. The October 4, 2012 Preliminary Engineering Report Update states: "no backup power is planned for the pumps" (LHPS) and "No backup power is planned for pumping" (IPS). In case of power loss, how would Flint supply its customers?
11. The latest plan shows only a 5 million gallon ground reservoir is planned for balancing between LHPS and IPS. How is redundancy maintained?
12. Related to the construction cost:
  - a. Does it include an additional traffic lane since the construction will occupy half the right of way?
  - b. Does it include costs/fees for permit requirements such as inspection cost by the jurisdictional authorities? As a point of reference, the permit fee costs for the Flint Transmission System came out to be \$5.8 million.

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- 
- c. Does the cost of the steel pipe segments include corrosion protection measures such as anode stations and related O&M?
  - d. SCADA monitoring stations require power. Is the cost of bring power to the SCADA stations included? Again, as a point of reference the for the Flint Transmission System we estimated \$800,000 for power to SCADA and valve operators.
13. The Flint River is identified as a backup: At what capacity? MDD or emergency supply?
14. Where did the 40 years come from (Flint hostage to Detroit)? DWSD's new contracts are 30 years with openers to revise terms of supply (volume and pressure) after the first two years, then three years, and then in five year increments thereafter.

STATE OF MICHIGAN CONTRACT NO. 271N3200089

CITY OF FLINT WATER SUPPLY ASSESSMENT

State of Michigan, Department of Treasury

**Appendix B: Cost Worksheets**

**Thelen, Mary Beth (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Wednesday, October 01, 2014 11:19 AM  
**To:** Scott, Allison (GOV); Muchmore, Dennis (GOV); Brader, Valerie (GOV)  
**Cc:** Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Datema, Maggie (DEQ); Sygo, Jim (DEQ); Wisniewski, Wendy (GOV); West, Samantha (GOV)  
**Subject:** CITY OF FLINT DRINKING WATER, GOVERNOR'S OFFICE BRIEFING PAPER  
**Attachments:** Governor Briefing - City of Flint 10-1-14.docx; Governor Briefing - City of Flint 10-1-14.pdf; Flint Monthly Pumpage Comparison.pdf; ODWMA-399-022.pdf

**Importance:** High

Dear Governor, Dennis, and Val:

Per your request, the attached briefing paper is on the City of Flint drinking water situation. Director Dan Wyant has asked that I send this to you. A Word version as well as a pdf version is attached. We have also included a copy of the policy ODWMA-399-022 which specifically provides guidance regarding boil water advisory situations, and a chart showing the significant increase in the City of Flint's water demands following the extreme conditions experienced this past winter.

Allison, please forward to the Governor. Thank you.

If you have any questions or need further information, please let us know. Thank you.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

Attachments

FP-GOV 2  
2/1/15

## **DEPARTMENT OF ENVIRONMENTAL QUALITY**

### **GOVERNOR'S OFFICE BRIEFING PAPER CITY OF FLINT DRINKING WATER**

#### **What contributed to the Boil Water Advisories in the city of Flint?**

A number of factors, not one specific cause, likely contributed to the Boil Water Advisories (BWAs) in the city of Flint during August and September 2014. While use of the Flint River has increased the amount of natural organic matter in the city's water, the Flint Water Treatment Plant (WTP) has performed well above treatment requirements for organic carbon removal. In addition, less than 20 percent of the water system was included in the advisory area. If treatment had been compromised, detections would have been widespread throughout the city, rather than in such a localized area.

The city's water distribution system has suffered from a lack of infrastructure investment and asset management. Most of the city's over 550 miles of water mains are now over 75 years old and constructed of cast iron piping. Cast iron pipe is subject to internal corrosion, called tuberculation, which causes buildup on the pipe interior, leading to water quality issues, reduced flow and pressures, and leakage. Tuberculation also encourages the development of biofilms, layers of bacteria that attach to the interior pipe wall. Biofilm growth is common in areas of piping with little or no disinfectant residual, and together with tuberculation can clog water lines to the point of insufficient water pressure.

The city has also experienced decades of a declining user base and water use associated with vacant homes, commercial businesses, and industrial property. Declining water use leads to excess residence time within the city's distribution pipes and water storage facilities, accelerating tuberculation, biofilm growth, and disinfectant residual degradation. While the city has recently seen an infusion of funding for blight removal, contractors completing this work have been improperly using fire hydrants, causing hydraulic disturbances that dislodged and suspended settled debris, which may have contributed to the bacterial contamination.

The winter of 2014 was also one of the coldest experienced by the water system. The city, which historically has unaccounted water losses of over 30 percent, has seen even greater losses since February 2014 due to an increase in cold weather-related water main breaks and leaks. The city lacks a formal maintenance program for its over 7,250 valves, which would normally be used to limit impacts during break repairs. Two valves on the transmission line used to supply the area of the BWAs were found to be closed during the city's investigation, causing longer residence time, reduced disinfectant residual, reduced flow, and reduced pressure. One of these valves has remained broken.

The BWAs also occurred during the warmest and, for 2014, relatively wet periods of August and September. Warm weather conditions are not only more conducive to bacterial growth but also degrade the water's disinfectant residual carried out from the WTP more quickly. Longer residence times, biofilms, and tuberculation also contribute to disinfectant residual degradation. Warm wet weather conditions also allow water contaminated with bacteria to pool around piping with leaks and breaks.

### **Process for Issuance and Cancelation of a Boil Water Advisory**

There are a number of conditions that can trigger BWAs. This includes the following:

- Bacteria Monitoring Detections
- Bacteria Standards Violations
- Treatment System Failures
- Waterborne Disease Outbreaks
- Loss of System Pressure
- Water Main Breaks
- Other Interruptions in Service

The Department of Environmental Quality (DEQ) has developed a policy and procedure regarding BWAs to help guide staff, provide consistency, and maintain public health. A PDF of Policy and Procedure No. ODWMA-399-022 is being forwarded with this briefing paper.

BWAs may be self-initiated by the water system, issued collaboratively in consultation with the DEQ, or when necessary mandated by the DEQ. Requesting customers to boil the water when bacterial contamination has occurred provides an added barrier of public health protection.

The BWAs that recently occurred in the city of Flint were associated with bacteria monitoring detections and violations of bacteria standards. These advisories were issued by the city of Flint collaboratively in consultation with the DEQ.

Current regulations regarding monitoring and standards for bacteria in water distribution systems were developed by the U.S. Environmental Protection Agency, have been in effect since 1990, and were incorporated into the Michigan Safe Drinking Water Act, 1976 PA 399, as amended. There are a variety of bacteria, parasites, and viruses that can potentially cause health problems if humans ingest them in drinking water. Testing water for each of these potential pathogens would be difficult and expensive. Instead, water systems test for total coliform and *E.coli*. Total coliform bacteria react to water treatment in a manner similar to many pathogens. Therefore, the presence of total coliform in drinking water indicates there may be a pathway for pathogens or other contaminants to enter the system. The absence of total coliforms in the distribution system minimizes the likelihood that pathogens are present. *E.coli* is itself a pathogen, and its detection would be direct evidence of a health risk.



Once a BWA has been issued, time is needed to investigate potential causes and implement corrective measures. The larger the water system, the more time this may take. Once corrective measures have been taken, samples must be collected and analyzed to confirm that bacteria are no longer present. Using the most common analytical method, samples must be incubated for a period of 24 hours before results can be obtained. In situations where the bacterial contamination has been confirmed, two consecutive rounds of safe samples collected at least 24 hours apart are normally obtained before canceling a BWA. Adding each of these steps together, a normal response period to cancel a BWA under these circumstances would be expected to take at least 3 to 4 days.

### **Recent History of the City of Flint Water System**

Historically, the city of Flint had been a customer of the Detroit Water and Sewerage Department (DWSD) while simultaneously maintaining the Flint WTP to provide emergency backup service using the Flint River. The WTP performed quarterly test operations to maintain readiness and was utilized twice in 2009, supplying water once for 2 days and the other for 3 days.

In April 2013 the city of Flint notified the DWSD that it would be terminating service in the future and contracting for raw water service from the Karegnondi Water Authority (KWA). Work on the KWA pipeline from Lake Huron broke ground in June 2013 and is expected to be completed with connection in late 2016.

In August 2013 Rowe Professional Services Company completed an engineering proposal for improvements to the Flint WTP that would allow continuous operation of the WTP utilizing the Flint River in lieu of continuing service from the DWSD until completion of the KWA pipeline. In March 2014 the city of Flint entered into a Consent Agreement with the DEQ regarding the Flint WTP's lime sludge facility. In April 2014 the DEQ issued a construction permit for improvements to the Flint WTP. On April 25, 2014, the city of Flint began continuous operation of the WTP, using water from the Flint River and discontinued the purchase of water from the DWSD.

A BWA was issued for August 15-20, 2014, for a portion of the city of Flint due to localized detections of total coliform and *E.coli* bacteria. Another BWA was issued for September 5-9, 2014, due to localized detections of total coliform bacteria in the same and adjacent portions of the city of Flint. The advisory covered an area of approximately six square miles. The city of Flint has a total land area of just over 34 square miles.

While many of the BWA contributing factors listed above require long-term solutions, the city has taken operational steps to limit the potential for a BWA to reoccur. The city has increased flushing of water mains to limit residence time, maintain disinfectant residual, and help remove buildup and deposits within the piping. The city is boosting chlorine disinfectant residual at locations in the distribution system as needed. The city continues to investigate water leaks and water main breaks and the status and condition of system valves.

Prepared by: Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
Department of Environmental Quality  
October 1, 2014

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BWAs may be self-initiated by the water system, issued collaboratively in consultation with the DEQ, or when necessary mandated by the DEQ. Requesting customers to boil the water when bacterial contamination has occurred provides an added barrier of public health protection.

The BWAs that recently occurred in the city of Flint were associated with bacteria monitoring detections and violations of bacteria standards. These advisories were issued by the city of Flint collaboratively in consultation with the DEQ.

Current regulations regarding monitoring and standards for bacteria in water distribution systems were developed by the U.S. Environmental Protection Agency, have been in effect since 1990, and were incorporated into the Michigan Safe Drinking Water Act, 1976 PA 399, as amended. There are a variety of bacteria, parasites, and viruses that can potentially cause health problems if humans ingest them in drinking water. Testing water for each of these potential pathogens would be difficult and expensive. Instead, water systems test for total coliform and *E.coli*. Total coliform bacteria react to water treatment in a manner similar to many pathogens. Therefore, the presence of total coliform in drinking water indicates there may be a pathway for pathogens or other contaminants to enter the system. The absence of total coliforms in the distribution system minimizes the likelihood that pathogens are present. *E.coli* is itself a pathogen, and its detection would be direct evidence of a health risk.

Once a BWA has been issued, time is needed to investigate potential causes and implement corrective measures. The larger the water system, the more time this may take. Once corrective measures have been taken, samples must be collected and analyzed to confirm that bacteria are no longer present. Using the most common analytical method, samples must be incubated for a period of 24 hours before results can be obtained. In situations where the bacterial contamination has been confirmed, two consecutive rounds of safe samples collected at least 24 hours apart are normally obtained before canceling a BWA. Adding each of these steps together, a normal response period to cancel a BWA under these circumstances would be expected to take at least 3 to 4 days.

### **Recent History of the City of Flint Water System**

Historically, the city of Flint had been a customer of the Detroit Water and Sewerage Department (DWSD) while simultaneously maintaining the Flint WTP to provide emergency backup service using the Flint River. The WTP performed quarterly test operations to maintain readiness and was utilized twice in 2009, supplying water once for 2 days and the other for 3 days.

In April 2013 the city of Flint notified the DWSD that it would be terminating service in the future and contracting for raw water service from the Karegnondi Water Authority (KWA). Work on the KWA pipeline from Lake Huron broke ground in June 2013 and is expected to be completed with connection in late 2016.

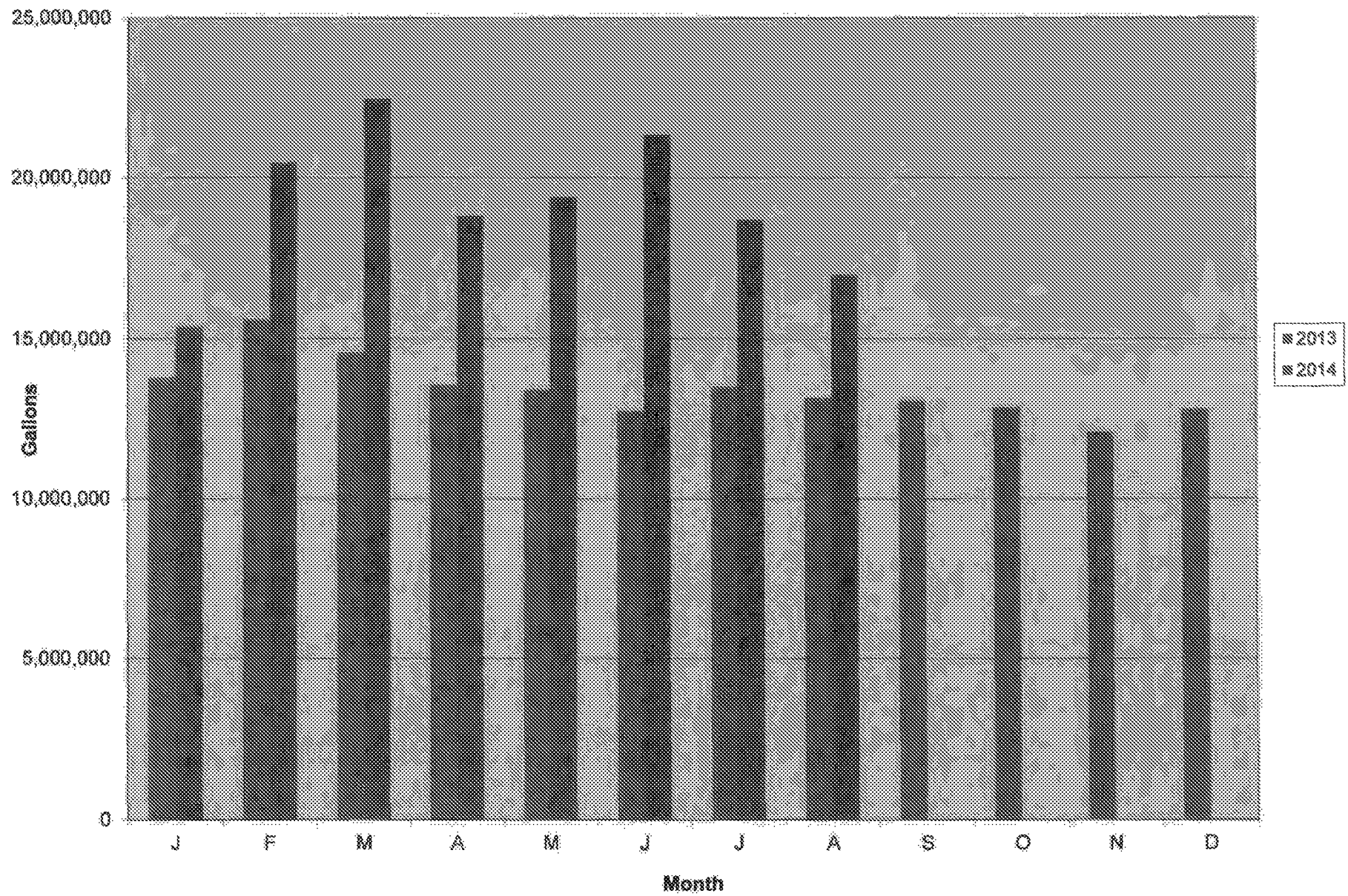
In August 2013 Rowe Professional Services Company completed an engineering proposal for improvements to the Flint WTP that would allow continuous operation of the WTP utilizing the Flint River in lieu of continuing service from the DWSD until completion of the KWA pipeline. In March 2014 the city of Flint entered into a Consent Agreement with the DEQ regarding the Flint WTP's lime sludge facility. In April 2014 the DEQ issued a construction permit for improvements to the Flint WTP. On April 25, 2014, the city of Flint began continuous operation of the WTP, using water from the Flint River and discontinued the purchase of water from the DWSD.


A BWA was issued for August 15-20, 2014, for a portion of the city of Flint due to localized detections of total coliform and *E.coli* bacteria. Another BWA was issued for September 5-9, 2014, due to localized detections of total coliform bacteria in the same and adjacent portions of the city of Flint. The advisory covered an area of approximately six square miles. The city of Flint has a total land area of just over 34 square miles.

While many of the BWA contributing factors listed above require long-term solutions, the city has taken operational steps to limit the potential for a BWA to reoccur. The city has increased flushing of water mains to limit residence time, maintain disinfectant residual, and help remove buildup and deposits within the piping. The city is boosting chlorine disinfectant residual at locations in the distribution system as needed. The city continues to investigate water leaks and water main breaks and the status and condition of system valves.

Prepared by: Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
Department of Environmental Quality  
October 1, 2014

City of Flint Monthly Averages



	<b>OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE POLICY AND PROCEDURE</b>		<b>DEPARTMENT OF ENVIRONMENTAL QUALITY</b>
<b>Original Effective Date:</b> October 12, 2007	<b>Subject:</b> Guidelines for Issuing Boil Water Advisories to Address Potential Microbial Contamination of Community Water Supplies		<b>Category:</b> <input type="checkbox"/> Internal/Administrative <input type="checkbox"/> External/Noninterpretive <input checked="" type="checkbox"/> External/Interpretive
<b>Revised Date:</b>	<b>Division/Office and Program Names:</b> ODWMA-Public Water System Supervision Program		
<b>Reformatted Date:</b> January 24, 2013	<b>Number:</b> ODWMA-399-022	<b>Page:</b> 1 of 10	

*A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.*

#### **INTRODUCTION, PURPOSE, OR ISSUE:**

Community water systems are expected to provide customers with a continuous supply of water that meets both federal and state drinking water standards. However, there may be circumstances when the public must be notified that the water may not be safe. In these circumstances, a boil water advisory may be issued to prevent illness from known or suspected microbiological contamination. This policy is to provide guidance to Office of Drinking Water and Municipal Assistance (ODWMA) drinking water program staff on advising community water system personnel when to issue and rescind a boil water advisory, the appropriate content, and the manner and method of delivery.

#### **AUTHORITY:**

Administrative rule R 325.10401a promulgated under the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), being Michigan Compiled Law 325.1001 *et seq.*, requires public notification for violations of maximum contaminant levels and treatment techniques plus other situations as determined by the DEQ. Each public notice is required to state what actions consumers should take during a violation, which may include a statement recommending water customers boil all water used for consumption until further notice.

In addition, R 325.11207 allows the DEQ to require the supplier of water to provide notice to customers or users that include any precautionary measures deemed necessary when an interruption in water service occurs, which could include low, zero, or negative pressure events.

Furthermore, R 325.12303 requires a supplier of water to include in their contingency planning a description of precautions or measures to be taken to protect the health of those customers or users that may be affected by an emergency. R 325.12304 also requires a supplier of water to notify the DEQ when an emergency is discovered and how the supply will notify its customers or users. While the content of this notification to customers or users may vary depending upon individual circumstances, each notification to customers or users must state what actions or precautions they should take, which may include a statement to boil all water used for consumption until further notice.



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**STAKEHOLDER INVOLVEMENT:**

DEQ staff met with Municipal Utilities Directors to seek input on issues that were subsequently addressed in this policy and procedure.

**DEFINITIONS:**

**"Boil Water Advisory (BWA)"** – A written or verbal advisory issued by the community water system or DEQ notifying the users of the water system that the water is or may be contaminated and advising them to boil the water prior to using it for drinking or cooking.

**"Community Water Supply (CWS)"** – A public water supply (PWS) that provides year-round service to not fewer than 15 living units, or that regularly provides year-round service to not fewer than 25 residents. Examples include municipalities, such as cities, villages, and townships; apartment complexes; manufactured housing communities; condominiums; and nursing homes.

**"Complete Loss of Pressure"** – Sustained negative pressures or pressure below five psi in any portion of a distribution system. It does not include instantaneous low or negative pressure occurring from pressure surges caused by pump cycling, valve operation, or other water hammer events.

**"Maximum Contaminant Level (MCL)"** – The maximum permissible level of a contaminant in water that is delivered to any user of a PWS.

**"Repeat Sample"** – A sample that is collected and analyzed in response to a previous coliform-positive sample.

**"Routine Sample"** – A water sample that is collected and analyzed to meet the monitoring requirements for total coliform, as outlined in the written sampling plan.

**"Tier 1 Public Notice"** – A public notice required to be provided as soon as practical but not later than 24 hours after the supplier learns of a violation or situation that has significant potential to have serious adverse effects on human health as a result of short-term exposure. A Tier 1 Public Notice also requires the supplier to initiate consultation with the DEQ as soon as practical but not later than 24 hours after the supplier learns of the violation or situation. Examples of these violations or situations include:

1. A violation of the Total Coliform MCL when fecal or *E.coli* are present in the distribution system;
2. A violation of the treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit;
3. An occurrence of a waterborne disease outbreak;
4. A failure or significant interruption in key water treatment processes;
5. A disruption of the water supply or distribution system; and

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6. Other violations or situations as determined by the DEQ on a case-by-case basis. A violation or situation that requires a Tier 1 Public Notice also requires the supplier to consult with the DEQ to determine additional public notice requirements, including the timing, form, manner, frequency and content of the notice designed to reach all persons served, and any repeat notices or directions. At a minimum, one or more of the following forms of delivery must be used:
- a. Appropriate broadcast media;
  - b. Posting of the notice in conspicuous locations throughout the area served by the system;
  - c. Hand delivery of the notice to persons served by the system; or
  - d. Another delivery method approved by the DEQ.

Within 10 days of completing the Tier 1 Public Notice, the supplier shall submit to the DEQ a certification that it fully complied with the public notification requirements, including a representative copy of the type of notice distributed to persons served by the system and to the media.

"Tier 2 Public Notice" -- A public notice required to be provided as soon as practical but not later than 30 days after the supplier learns of a violation or situation that has the potential to have serious adverse effects on human health. Examples of these violations or situations include:

1. All violations of MCL, maximum residual disinfectant level, and treatment technique requirements except where the DEQ determines a Tier 1 notice is required.
2. Violations of monitoring and testing procedure requirements, taking into account potential health impacts and persistence of the violation; and
3. Failure to comply with a variance or exemption.

For a Tier 2 Public Notice, the DEQ may, on a case-by-case basis, grant extensions in writing for up to three months from the date the supplier learns of the violation or situation, for reasons such as coordinating with billing cycles or if the violation or situation was quickly resolved and no longer poses any risk to the persons served. A Tier 2 Public Notice shall be repeated every three months as long as the violation or situation exists. A Tier 2 Public Notice and any repeat notices shall be in a form and issued in a manner that is reasonably calculated to reach persons served in the required time period. At a minimum, the notice shall be provided:

1. By mail or direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the supplier, and
2. By other methods reasonably calculated to reach other persons not receiving a bill, such as apartment dwellers, university students, nursing home patients and prison inmates. Other methods may include:
  - a. Publication in a local newspaper
  - b. Delivery of multiple copies to apartment complexes and manufactured housing communities
  - c. Posting in public places or on the Internet
  - d. Delivery to community organizations

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"Treatment Technique (TT)" – Minimum treatment requirement or a necessary methodology or technology that is employed by a supplier of water for the control of the chemical, physical, biological, or radiological characteristics of a PWS.

**POLICY:**

A BWA may be issued for a variety of reasons when microbial contamination is known or suspected. Total Coliform Rule (TCR) MCL violations, surface water TT violations, low or loss of pressure events, and waterborne disease outbreaks are circumstances when a BWA may be issued. Each of these situations is discussed in detail below. However, these situations are not the only times a BWA can or should be issued. Each incident must be handled on a case-by-case basis, using professional judgment to evaluate the circumstances in each situation.

Finally, there may be situations when water systems experience contamination that is not microbial, but chemical due to a chemical spill or backflow due to a cross connection. In these cases, a notice to customers could include "Do Not Use" language since boiling the water may not remove the contamination.

**Types of Incidents:**

1. Violation of a Drinking Water Standard

a. TCR MCL Violations

An acute TCR MCL violation occurs when monitoring indicates the presence of coliform organisms in both a routine and a follow-up repeat sample in the same monitoring period, and either analysis (routine or repeat) is also positive for fecal or *E.coli*. Because this MCL violation confirms the presence of a more direct connection to contamination, these violations warrant issuance of a BWA, unless there are unique circumstances.

A non-acute TCR MCL violation occurs when monitoring indicates the presence of coliform bacteria in 2 or more samples in the same monitoring period for a supplier collecting less than 40 samples per month, or in more than 5 percent of the samples for a supplier collecting 40 or more samples per month, and the criteria for an acute violation did not occur, i.e., fecal coliform or *E.coli* were NOT detected present in either a routine or repeat sample. For example, a system that collects 5 samples per week for a total of 20 per month may have 1 sample report positive for total coliform or fecal/*E.coli* during the first week, but all repeat samples report negative for coliform. If another sample in a subsequent week also reports total or fecal/*E.coli* positive, but again, all repeat samples are coliform-negative, then a non-acute TCR MCL violation has occurred because 2 or more samples reported positive for coliform, but no fecal coliform or *E.coli* were detected in both a routine and a repeat sample.

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When a non-acute violation occurs, staff should evaluate possible sources of contamination. If a source is identified that is considered likely to contribute disease causing organisms or result in water of questionable quality still being distributed, a BWA should be instituted. Examples of contaminant sources that would elevate the public health risk include, but are not limited to:

- flooding of the wells
- failure of the treatment system
- recent construction activity in the distribution system
- vermin (birds, rodents, etc.) activity in storage tanks
- system-wide or extensive pressure loss in the distribution system

Even if the source of contamination is not easily identified, a BWA may be appropriate for a non-acute TCR violation if the violation is widespread or ongoing. A BWA shall be instituted if monitoring indicates *E. coli* or fecal coliform contamination unless unusual circumstances warrant consideration, such as the absence of any coliform in repeat samples, or when staff are assured that the contamination has been eliminated before confirmation results are available.

However, not every TCR MCL violation must result in a BWA. There may be a few exceptions when there is a TCR MCL violation but a BWA is not needed. For example, a violation may be declared in situations where samples collected on different days from widely dispersed locations report coliform present even though repeat samples do not show positive results. In this case, the sampling results may constitute a MCL violation, but a BWA may not be necessary.

If a BWA is deemed necessary by the ODWMA, it should be issued as soon as possible but no later than 24 hours after the system learns of the violation. Because violation of an MCL results in required public notification (PN) per the PN Rule, the water supply may issue the PN and BWA simultaneously in one document (highly recommended) and must meet all the requirements of a Tier 1 PN and include BWA language.

After measures have been taken to eliminate the source(s) of contamination, such as initiating or increasing chlorine feed rates and system flushing, additional sampling must be conducted. Raw water bacteriological sampling is also encouraged to eliminate the raw water as the possible source of contamination. For MCL violations, the BWA can be rescinded after the analyses of two sets of samples collected 24 hours apart report the absence of coliform bacteria. The number of samples in each set should be a minimum of five samples, but can be decreased or increased based on system size or the extent of the affected area. Systems are encouraged to use routine sample sites if available and to use extra care if routine sites are not available.

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b. Surface Water Treatment Rule (SWTR) TT Violations

SWTR TT violations include:

- exceedance of turbidity standards at filter confluence point
- failure to meet disinfection contact time requirements (C\*T)
- failure to meet disinfection residual standards

Upon determination of an SWTR TT violation, ODWMA staff must determine if the violation poses a threat to public health. For example, if the turbidity levels at the filter confluence point were found to have exceeded 0.3 nephelometric turbidity units (NTUs) in 95 percent of the samples in a two-month period, an SWTR TT violation has occurred. Based upon a review of plant performance and consultation with program managers, staff may determine that no significant health risk was posed and no BWA is necessary. However, the water supply must still issue a Tier 2 PN within 30 days of the violation. On the other hand, a BWA is likely to be necessary for a treatment plant that gets overwhelmed by excessive runoff and reports a turbidity level in excess of 1.0 NTU at the filter confluence point for a four-hour period.

If the TT violation is ongoing or prolonged, or the ODWMA determines a significant public health risk is posed, ODWMA staff may elevate the PN to Tier 1 status, which must be issued within 24 hours and include BWA language. After appropriate measures have been taken to reduce or eliminate any health risk, additional monitoring must be conducted. Appropriate measures may include increasing coagulant dose, increasing chlorine residuals through the treatment plant, backwashing filters more often and flushing key system components. In this case, a BWA can be rescinded after analyses of two sets of samples collected 24 hours apart report the absence of coliform bacteria. The number of samples in each set should be a minimum of five samples, but can be decreased or increased based on type and severity of the TT violation.

Surface water plants utilizing conventional or direct filtration must add a primary coagulant under R 325.11008. Failure to add a primary coagulant is a violation of Act 399, and may also contribute to a TT violation under R 325.10611 (Filtration and Disinfection) which requires 3-log inactivation of giardia and 4-log inactivation of viruses. In these cases, ODWMA staff will have to determine if the violation poses a threat to public health and whether other actions are necessary, such as requiring a BWA. Factors to consider if a BWA is necessary would include chlorine residual concentrations throughout the treatment plant, raw water quality, C\*T compliance, plus individual filter effluent and combined filter effluent turbidity levels.

2. Waterborne Disease Outbreaks

Waterborne disease outbreaks can be declared by the Centers for Disease Control and Prevention, the Department of Community Health, a local health department, or other public

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health institutions. If an outbreak is declared, the ODWMA will work with the declaring agency to ensure affected community public water supplies take appropriate measures to mitigate public exposure. These measures will include appropriate public notification, including instructions to boil water if appropriate. The ODWMA will allow the water supply to rescind the notification when the agency declaring the outbreak indicates it is safe to do so as the result of additional monitoring.

### 3. Interruptions in Service

#### a. Negative or Complete Loss of Pressure

A complete loss of pressure or negative pressure in the distribution system must result in a BWA being issued to all water customers in the impacted area. After pressure is restored and the system recovers (tanks are filling and enough sources are operating to ensure pressures do not drop again), the affected area should be thoroughly flushed and coliform samples must be taken throughout the area to determine if the distribution system remains free of coliform contamination. The number of samples will vary depending on the size of the system and the extent of the area impacted. For very small systems that experience a power failure that results in a complete loss of pressure throughout the distribution system, a minimum of three samples should be collected. If applicable, chlorine residual measurements should be taken to ensure that an adequate disinfectant residual is present. If possible, chlorine dosages and residuals should be increased by 1 to 2 parts per million during this period as a corrective and preventive measure. If the first round of sampling does not detect coliform bacteria, the advisory may be rescinded. However, if the first round of sampling detects coliform bacteria, additional flushing should be conducted in the area where the positive coliform samples were collected and a second round of coliform samples collected from the area. The BWA should remain in effect until safe coliform sample results are obtained.

#### b. Low Pressure Events

Low pressure events might not result in a BWA. Low pressure is considered a drop in pressure below 20 psi but greater than 5 psi. A drop in water pressure in a distribution system could allow contamination to enter the water system through backflow by backpressure or backsiphonage. The decision to issue a BWA should be made on a case-by-case basis and be based upon professional judgment of all available data that may indicate the extent of the problem, such as:

- Geographical extent of the pressure loss
- Nature of the service area (residential vs. commercial/industrial)
- Duration of the low pressure condition
- Disinfection practices of the water system
- Relative elevation differences in the service area
- Status of the local cross connection control program

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- Age and condition of the underground piping
- Amount of underground piping located in areas of a high groundwater table
- Ability and willingness of the operators to rapidly apply chlorine to the system or distribute an increased chlorine residual throughout the affected area

After normal pressure is restored, the impacted area should be thoroughly flushed and coliform samples taken throughout the area to determine if the distribution system is free of any bacteriological contamination. The collection of coliform samples after low pressure events is not absolutely required, but may be recommended based on the factors above.

c. Water Main Breaks or Repairs

A BWA may be issued during water main breaks and after the break has been repaired. Whether or not to issue a BWA will depend on the location and severity of the break and, more importantly, a decision based on sound engineering judgment that the integrity of the water system has been maintained. If at all possible, repairs should be performed under reduced or low pressure by closing the closest valves on each side of the break just enough to reduce the flow so the repairs can be made under pressure while the water flowing from the break is diverted away from the excavation to maintain clean sanitary conditions. If the water main can be repaired under pressure, and no nonpotable water, soil, or other potential contaminants entered the main during the break and repair process, then a BWA is not necessary. If the water main that was removed from service is flushed, disinfected, and sampled in accordance with AWWA Standard C651 before being placed back into service, a BWA does not need to be issued.

If a water main break results in a complete loss of pressure before, during, or after the repair is made, a BWA must be issued to all customers in the affected area. The BWA should remain in effect until the area is flushed, chlorine residuals are reestablished (if applicable), and sample results do not detect coliform bacteria.

**Content and Delivery of a BWA**

If the ODWMA determines a BWA is necessary, the water supply must issue the advisory as soon as practical, but not later than 24 hours after being advised to do so. The supply must make a good faith attempt to notify all customers in the affected area. Appropriate methods of distribution are situation specific, but may include radio or television broadcasts, hand delivery, and/or posting in conspicuous locations throughout the area. Delivery requirements as detailed in the PN Rule should be used to determine appropriate delivery methods.

Although there are content requirements for public notification under the PN Rule, there are no requirements specific to boil water language. To ensure all appropriate information is transmitted to the customers, a BWA should include the same content elements as required for

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public notification under the PN Rule. If a BWA is issued as the result of an MCL violation and the water supply issues the BWA in conjunction with the required PN (highly recommended), the content **MUST** meet all PN Rule content, delivery, and reporting requirements.

The ODWMA boil water language is consistent with the U.S. Environmental Protection Agency policy that requires water be brought to a boil and allowed to boil for one minute before use. The language also suggests the use of bottled water as an alternative to boiling and describes the circumstances under which boiled or bottled water should be used.

Staff should notify the appropriate local health department and the Department of Agriculture and Rural Development, Food and Dairy Division, whenever a BWA is issued or rescinded. These agencies may receive calls from concerned customers or be involved in oversight of facilities impacted by the boil advisory and, therefore, need to be aware of the situation.

Several BWA templates have been created and are available to ODWMA staff on the DEQ Intranet. To ensure consistency and inclusion of all necessary content, these templates should be used as the basis for PNs and/or a BWA. Available templates include, but are not limited to:

- Advisory for a TCR MCL.
- Advisory for a low/no pressure event.
- Notification for cancellation of a BWA.

**PROCEDURES:**

WHO	DOES WHAT
Public Water Supply	Notify DEQ of results in a timely manner as required by law and follow through with appropriate actions.
District Staff	Respond to all TCR and TT violations plus complete loss of pressure events in a timely manner and determine whether a BWA needs to be issued. <ul style="list-style-type: none"><li>• If needed, assist supply in drafting BWA and determining most appropriate method of delivery with approval from the District Supervisor.</li><li>• If needed, assist the supply in determining actions to remove the possible contamination including steps needed to rescind the BWA.</li></ul>
District Staff	Provide on-site technical assistance for acute TCR MCL violations and other boil water situations as appropriate.
District Supervisors	Assist District Staff in the all matters pertaining to issuing a BWA.



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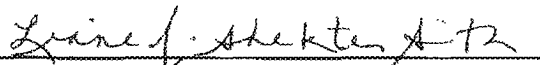
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REFERENCES:

Safe Drinking Water Act, 1976 PA 399, as amended, being Michigan Compiled Law 325.1001 *et seq.*, and the administrative rules promulgated thereunder, being R 325.10101 *et seq.* of the Michigan Administrative Code.

OFFICE CHIEF APPROVAL:

  
Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance

1/18/2013  
Date

DEPUTY DIRECTOR APPROVAL:

  
Jim Sygo, Deputy Director

1/24/2013  
Date

**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, October 16, 2014 2:41 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Flint Main Break and Valve replacement  
**Attachments:** Robert T main break and valve replacement notice.pdf; Utility Repairs\_Dort Hwy Oct 18 2014.pdf

Please print – please keep confidential. Thanks.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

Handwritten initials "DT" in blue ink.

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, October 15, 2014 4:31 PM  
**To:** Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)  
**Cc:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** FW: Flint Main Break and Valve replacement

FYI. The City of Flint is doing some major repair work this weekend as indicated in the attached information. Customers in the affected area are being notified by the City that they may temporarily lose service and that when service is restored should boil their water until the City can verify that the line was properly disinfected through bacteria monitoring results. This protocol follows normal construction repair standards.

To be clear this advisory is not based on any confirmed contamination, but a standard precautionary measure as part of normal construction and repair work.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

Handwritten initials "OK" and a large "2" with a horizontal line through it, in blue ink.

**From:** Daugherty Johnson [<mailto:djohnson@cityofflint.com>]  
**Sent:** Wednesday, October 15, 2014 4:11 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Brent Wright; Robert Bincsik  
**Subject:** Re: Main Break and Valve replacement

I have attached the maps and press release we are sending out. The hand drawn is internal info. Please send comments as necessary.

Thanks  
Duffy

Handwritten notes on a sticky note: "yes" and a checkmark.

On Wed, Oct 15, 2014 at 3:06 PM, Daugherty Johnson <[djohnson@cityofflint.com](mailto:djohnson@cityofflint.com)> wrote:  
Hello Steve and Mike. The City is planning on repairing a break on a 16" line on Saturday. The shutdown area will also allow us to replace a 24" valve, 18" valve and two 12" valves. We are planning to issue a Boil Notice for the affected areas. Could you please get back with me so we can coordinate what we've got going with your office. You can call me at (810) 577-8906 to set up a conference call.

Thanks  
Daugherty 'Duffy' Johnson  
Utilities Administrator  
City of Flint



CITY OF FLINT  
OFFICE OF EMERGENCY MANAGER  
DARNELL EARLEY  
ICMA-CM, MPA

In the unlikely event that any residents in the area should experience a loss of water or low pressure during the repairs Saturday, they should expect to boil water for 48 hours after service is restored based on testing. Low pressure and discoloration may occur for those affected. The City of Flint asks that residents watch their local news station for announcement of the completion of repairs.

The work being performed will result in improved operational control over our large transmission line down Dort Hwy. which will include improving chlorine residuals in the southern portion of Flint. All of the scheduled work taking place is part of an ongoing, broader plan to examine different sections of the water system citywide for needed repairs and upgrades. Upgrading critical infrastructure such as the water system is a key part of the City's Strategic Plan.

—END—



CITY OF FLINT  
OFFICE OF EMERGENCY MANAGER  
DARNELL EARLEY  
ICMA-CM, MPA

Jason Lorenz  
Public Information Officer  
(810) 237-2039  
jlorenz@cityofflint.com

For Immediate Release

**Major Water Line Repairs Will Take Place in Robert T. Longway Blvd & Dort Hwy. Area, More Repairs to System Scheduled**

*Flint, Michigan – October 15, 2014* – The City of Flint's Department of Public Works has today announced that work on a water main break in the area of Dort and Longway is taking place and will be followed by more scheduled repairs to the system in that area. A break in the sixteen inch water main was discovered a week ago and crews have been examining the surrounding system. As a result, a number of valves in the area have been identified for repairs which will begin on Saturday, October 18, 2014.

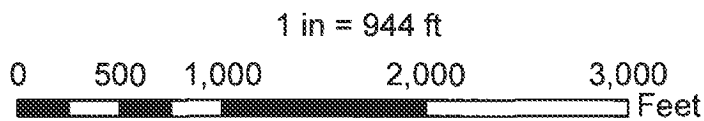
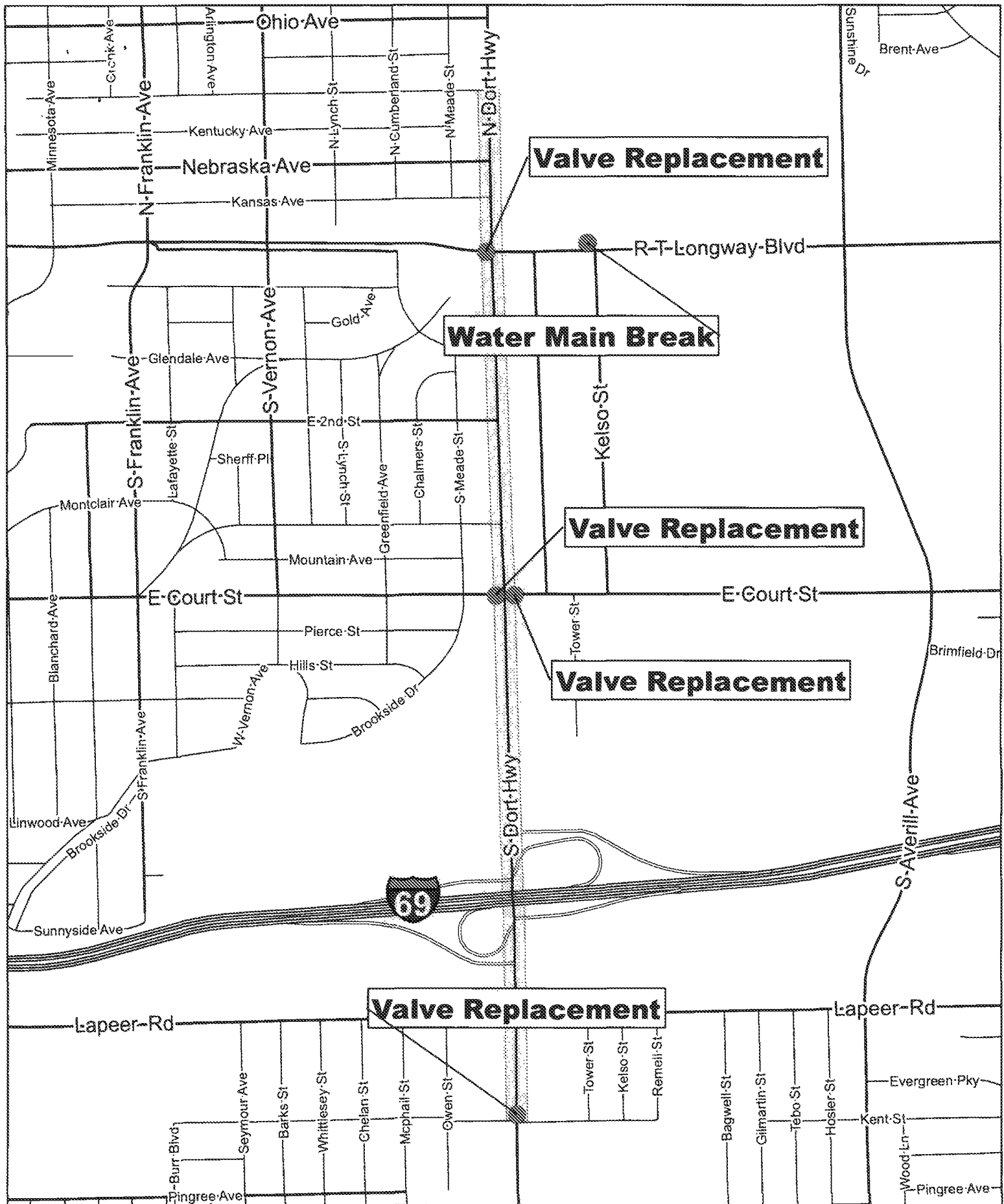
This work will be on a part of the City's water transmission system, to which no residential customers are connected. However, there will be a reduction of pressure to the system, which may cause low water pressure in the surrounding area. In accordance with DEQ regulations we will be issuing a Boil Water Notice for the highlighted area (see attached map). Only residents who have low pressure during this 12 hour period are affected. Once again, this is merely a precaution and no one in the affected area should be directly connected to the portion of the system being repaired.

–CONTINUE–

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City Hall  
1101 S. Saginaw Street - Flint, Michigan 48502  
810-766-7346 FAX: 810-766-7218 [www.cityofflint.com](http://www.cityofflint.com)





Does not  
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No





GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

- DIVISION OF -

WATER & WASTE SERVICES

G-4610 BEECHER ROAD - FLINT, MICHIGAN 48532-2617

PHONE (810) 732-7870 - FAX (810) 732-9773

JEFFREY WRIGHT  
COMMISSIONER

December 23, 2014

Sue McCormick, Director  
Detroit Water and Sewerage Department  
735 Randolph Street  
Detroit, MI 48226

Re: Term Agreement  
Genesee County Drain Commissioner, County Agency

Dear Director McCormick:

We have received and reviewed your letter dated December 12, 2014. As stated in your letter, DWSD and GCDC have been working towards a mutually agreeable solution to a situation that is very unique. In essence, GCDC and DWSD are negotiating toward a short-term, full service contract and a long-term emergency service contract. DWSD currently does not have any contract like this, so there have been many details to work out during our negotiations. There remain two (2) issues that need to be resolved: the cost versus the benefit of the emergency service and the fixed fees that need to be paid during the full service period. During our last conversation with representatives of your office, the later issue may be resolved. With that said, GCDC has committed to negotiating with DWSD to try and reach a mutually acceptable contract for short-term, full service and long-term emergency water supply.

I think it is beneficial to review the time line of events that have transpired.

December 20, 1965

The City of Flint and City of DWSD signed a 35 year contract, which expired on December 31, 2000. The contract continued on a year to year basis thereafter with a one year termination notice provision.

A key item in this contract was that DWSD gave franchise rights to the City of Flint for all of Genesee County. As a result, Genesee County could not be a direct customer of DWSD.

April 12, 2013

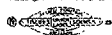
After the announcement that Flint signed as a constituent member of the KWA, DWSD sent the City of Flint a notice of termination of the contract to be effective April 2014.

November 2013

DWSD/GCDC/DEQ/State met TO DISCUSS Flint's decision process for deciding to go to KWA or stay with DWSD. Also discussed transition if separation was to occur.

April 17, 2014

Contract terminated by DWSD, City of Flint still purchased water, GCDC still purchased water, and Detroit modified its rate to a non-contract customer rate.



orig: Liane Sholte  
Smith  
ODWMA

cc: Director  
S496  
McDerm  
Crew  
4-1 MISC  
Datens  
Wurfel

April 30, 2014	City of Flint stopped receiving water from DWSD. GCDC closed two valves isolating Flint from the system. Closing the valves was witnessed by personnel of DWSD.
May 1, 2014	GCDC acquired the meter pit then FL-1 now GN-01 from Flint and GCDC became a direct non-contract customer of DWSD.
May and June 2014	GCDC paid its portion of the Flint rate 2013/2014 rate plus a penalty for non-contract status.
July 1, 2014	DWSD and GCDC determined the usage patterns for GCDC.
August 8, 2014	DWSD established a contract rate and a non-contract rate based on GCDC flows and ownership of the meter pit. DWSD billed the new non-contract rate effective July 1, 2014.
November 2014	Negotiations reach an impasse. DWSD says it's going to add additional penalty to GCDC rates.
December 2014	DWSD sends notice that DWSD is going to recommend an additional \$1,287,600 to GCDC rates because GCDC is unique.

We have enclosed our rate structure for the past year and the calculation of that rate. Our "current rates" as described in the December 12 letter already includes a penalty and now DWSD in mid-year wants to add an additional penalty.

Back in November of 2013, we all met in Detroit with the Governor regarding water rates and Flint's evaluation of DWSD versus KWA. At that meeting, you spoke of stranded costs and your obligation to recover those costs. Flint signed a 35 year contract. Flint remained a customer for 49 years until DWSD terminated its contract with Flint. There are no stranded costs remaining and if there are, those stranded costs rightfully belong with Flint, who was the contract holder with DWSD. Flint has fulfilled its contractual obligations and upon fulfilling those obligations, DWSD has never identified any stranded costs. Therefore, stranded costs are not at issue in our negotiations and they should not be included in the rate model applied to GCDC.

Since you terminated the contract with Flint, the volume of water has been reduced by 12-18 mgd to the Flint/GCDC area. What new capital investment can you point to that was for the benefit of GCDC? Please provide the legal argument that GCDC might be responsible for these costs. Keep in mind that GCDC has never signed an agreement with DWSD committing it to capital costs for any DWSD projects. GCDC has always made it clear that we would like full service from DWSD through 2016. After that, we were desirous of a mutual aid/backup supply agreement.

The State of Michigan requires a true cost of service in rate making for utilities serving greater than 1% of the State's population. DWSD falls into this category. For your 2013-2014 Budget, you set the rates for all customers by terminating Flint and charging an additional penalty – you received a windfall of revenue from the penalty. For your 2014-2015 Budget, you did not include Flint or GCDC in your rate calculation. The water revenue and penalty paid by GCDC is a windfall. Now mid-year, you are requesting an additional surcharge for the balance of the year – another windfall.

As you stated, we are unique. This uniqueness was identified in August of 2014 when you established a rate for GCDC outside of your rate model. In comparison to your contract customers, GCDC is unique. Contract customers are calculated by the model, even though GCDC rates are calculated by the model, GCDC pays a non-contract penalty as a percentage. This penalty is not paid by contract customers. Additionally, GCDC pays 80% of its rates in fixed fees. Contract customers pay 40% of its rates in fixed fees. Finally, it appears GCDC's rates can be changed arbitrarily at the whim of the Director and Board. Contract customers cannot.

This new proposed rate is vindictive, insulting and illegal. Both Genesee County and the City of Detroit are subdivisions of the State of Michigan. Should these punitive rates be put into effect, we will aggressively pursue all remedies available. With respect to the Governor, we have honored his request to not sue DWSD, but that is a request he can no longer expect us to honor.

Your statement that GCDC is in a fundamentally different position from Flint and other customers of DWSD as GCDC is correct, as GCDC has never been a contractual customer of DWSD. It is important here to recognize that due to the actions of DWSD in giving the franchise rights to the City of Flint for all of Genesee County, it was not possible for GCDC to be a customer. DWSD's actions are the only reason GCDC has never been a contract customer of DWSD. Flint was the only "old contract" customer that had their contract terminated. Why?

If it is the intent of DWSD to recapture capital costs associated with DWSD infrastructure investments, DWSD should have pursued these claims against the City of Flint when DWSD terminated its relationship with Flint. In essence, your argument is that any new customer to your system should be required to pay for prior improvements to the DWSD system even though the improvements were for a different customer of DWSD, the fact remains that the GCDC/Flint area uses 40% less water volume today than 8 months ago when Flint was also purchasing water from DWSD. DWSD has not needed to upgrade its infrastructure, nor has GCDC requested DWSD to do so, to furnish less water to the Genesee County area. Therefore, to establish another new rate for a non-contract customer to recoup capital investment that was never committed to that customer demonstrates clearly that this is a play to force GCDC into a long-term agreement with DWSD or results in a punitive charge.

GCDC and DWSD have been negotiating a short-term/long-term contract. GCDC does not need a backup supply from DWSD. We are willing to consider one if the cost is beneficial to our system. DWSD is the one that is requiring a thirty year agreement not GCDC. When GCDC separates from DWSD, there is significant infrastructure that will be mothballed or abandoned by

Sue McCormick  
December 23, 2014  
Page 4

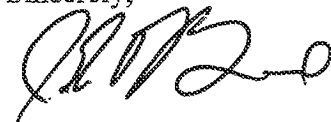
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DWSD. GCDC has offered to purchase the infrastructure from DWSD. This sale would be beneficial to both systems. These negotiations have been put in jeopardy by your threat to increase our rates unless we meet your demands for a long-term agreement.

Due to the above, GCDC has no choice but to suspend negotiations until this issue is resolved.

On a final note, it is interesting that you sent this letter the day after the Emergency Manager resigned.

Sincerely,

A handwritten signature in black ink, appearing to read "JOHN F. O'BRIEN", written in a cursive style.

John F. O'Brien, P.E., Director  
Division of Water and Waste Services

CC: Governor Snyder  
Dan Wyant, Director, DEQ  
Mayor Mike Duggan  
Jeff Wright, GCDC  
Laurie Koester, Esq.  
Kevin Kilby, Esq.

## WATER RATE HISTORY

Flint/GCDC

The consistent way to look at the rate by comparison of the aggregate value when it is a combination of fixed fee and commodity rate.

July 2012 -- June 2013 (Flint/Genesee)

Fixed Rate	\$8,484,000
Commodity	\$12.46
Aggregate Rate	\$19.11

July 2013 -- June 2014 (Flint/Genesee) (Rate through April 17, 2014)

Fixed Rate	\$8,856,072
Commodity	\$13.01
Aggregate	\$20.39

April 17, 2014 -- May 2014

Fixed Rate	\$9,776,592
Commodity	\$14.35
Aggregate	\$22.50

May 1 -- June 30, 2014

Fixed Rate	\$5,080,800
Commodity	\$15.18
Aggregate	\$23.37

July 2014 -- December 2014

Fixed Rate	\$13,792,800
Commodity	\$3.89
Aggregate	\$26.14

January 1, 2015 -- June 2016

Proposed	
Fixed Rate	\$15,451,200
Commodity	\$3.89
Aggregate	\$28.81

Another way to look at our rates is as the change in percentage:

Rates on Notice of Termination	\$20.39	
Current Rates	\$26.14	28% in 19 months
Proposed Rates	\$28.84	42% in 19 months

The cost of the penalty to GCDC since the termination of the DWSD/Flint contract:

Rate on Termination	\$20.39
Rate on Non-Contract	\$22.50
Difference	\$2.11
Cost for April 17 -- June 30	\$264,910.50
Volume:	185,550

As stated by DWSD in August of 2014:

Rates Contract 2014 -- 2015	\$23.16
Rates Non-Contract 2014-201	\$26.14
Difference	\$2.98
Cost July 1 -- December	\$923,800
Volume:	310,000

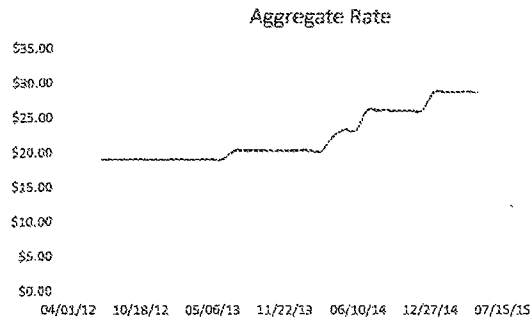
As stated by DWSD in August of 2014:

Rates Non-Contract	\$23.16
Rates Proposed	\$28.81
Difference	\$5.65
Cost January 1 -- June 30, 201	\$1,751,500
Volume:	310,000 (estimated)

Current total: \$1,888,710.50

Projected total: \$2,112,510.50  
(Same rate)

Projected total: \$2,940,210.50  
(New rate)



**Shekter Smith, Liane (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, August 25, 2015 1:56 PM  
**To:** 'walters313@gmail.com'  
**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Follow Up from our Aug. 4th meeting

Dear Ms. Walters,

I wanted to update you regarding our Department's findings related to questions raised during our meeting at the Governor's office on August 4. I apologize for the delay in getting back to you.

Lead and Copper Monitoring

Regarding Flint lead and copper compliance monitoring for the January – June 2015 period, the City has confirmed that all lead and copper samples collected throughout the City, whether routine sites or customer requests, were sent to the State of Michigan lab for analysis. Individual sample results are provided to the property owner within 30 days of receiving the lab results in accordance with the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 410(5)). Results from the State of Michigan lab are provided directly to our Office.

Staff have confirmed that the lead 90<sup>th</sup> percentile compliance calculation of 11 parts per billion is based on 69 samples that met the appropriate sampling location site criteria, and met the sample collection site and collection protocol requirements of the Safe Drinking Water Act for this monitoring period. A minimum of 60 samples were required for this monitoring period. As indicated during the meeting, the City's sampling for lead complies with the Action Level standard of 15 parts per billion, but based on the population served by the City and these results, the City will need to make a recommendation to the MDEQ on how they will fully optimize their corrosion control treatment. These next steps continue to follow the requirements of the Lead and Copper Rule.

Samples collected at your residence of 212 Browning Avenue were not included this compliance determination as you utilize a whole home filter. As stated in the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 710a, Lead and Copper in tap water; monitoring requirements) "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment alters the water chemistry and water quality such that it is no longer representative of public water from the City's distribution system. Therefore, the City cannot use samples collected at your residence as part of its determination for public water system compliance with the lead or copper action level standard.

Sample Summary (samples taken at your residence)

For your information, we are providing the information that we've gathered regarding samples collected at your home. Our records indicate between February and June of this year there were six samples collected by either you or Mr. Mike Glasgow with the City of Flint, and submitted to the State Laboratory for analysis as follows:

February 11, Bathroom tap, collected at 10:20 AM by Mike Glasgow. This sample was analyzed for aesthetic metals (copper, iron, manganese, and zinc) which does not include lead analysis.

February 18, Kitchen tap, collected at 7:15 AM by you. This sample was analyzed for lead (104 parts per billion) and copper (non-detect).

February 25, Kitchen tap, collected at 10:26 AM by Mike Glasgow. This sample was analyzed for metals including lead. All results (including lead) were non-detect except for Barium 0.01 parts per million. The result for Barium was well below its maximum contaminant level of 2 parts per million.

March 3, Kitchen tap, collected at 6:00 AM by you. This sample was analyzed for lead (397 parts per billion) and copper (non-detect).

March 18, Kitchen tap, collected at 11:10 AM by Mike Glasgow. This sample was analyzed for lead (4 parts per billion) and copper (non-detect).

April 2, Pre-point of service, collected at 8:00 AM by you. This sample was analyzed for lead (707 parts per billion) and copper (110 parts per billion).

#### Lead Education/Outreach

As we discussed during the meeting, we support efforts to educate homeowners about the sources of lead in their private residence, provide guidance measures to reduce the potential for lead exposure, and provide information on resources for lead abatement. Along those lines, our Office has been in contact with the Department of Health and Human Services, Environmental Health Division, Healthy Homes Section and had some preliminary discussions about a public education and assistance campaign regarding household lead issues, guidance and abatement.

Lead monitoring by public water systems serves a dual purpose. The first purpose is to ensure the public water supply is adequately treating its water to address corrosion potential and help limit lead exposure. The second purpose is to inform homeowners about lead levels within their individual residence so that they can make educated choices regarding their own exposure risk.

#### pH Results

During the meeting concerns were also expressed regarding pH levels within customer plumbing systems. As you may know, pH has no associated contaminant level as it is simply a numeric scale used to specify the acidity or alkalinity of a solution. The City of Flint conducts daily monitoring of pH values on both its raw and finished (treated) water at the City's water treatment plant as part of its operations. The City is also required to conduct water quality parameter monitoring in the distribution system, which includes pH. Samples are analyzed in accordance with Standard Methods using properly calibrated analytical equipment. Results for pH from these samples are summarized below.

Since late April 2014 – June 2015, the following pH conditions were reported:

Water Treatment Plant – Finished Water plant tap pH range = 7.07 minimum to 9.9 maximum, overall average 7.7, measured daily. We believe the 9.9 is a one-time anomaly from softening treatment.

Distribution System – Water Quality Parameters taken from 25 sample sites located throughout and monitored quarterly

July – Sept. 2014: pH 7.71 average, range 7.56 – 7.86

Oct. – Dec. 2014: pH 7.88 average, range 7.62 – 8.10

Jan. – March 2015: pH 7.81 average, range 7.60 – 7.99

April – June 2015: pH 7.63 Average, range 7.48 – 7.80

In addition, the City's treated water contains alkalinity, which is a measurement of the buffering capacity of water to resist a change in pH. As you can see from the water quality parameter monitoring results above there has been very little change in pH within the City's distribution system. The pH levels described within customer site piping or premise plumbing systems are believed to be the result of onsite treatment and not representative of water quality shown to be occurring in the public water supply system.

#### Consumer Confidence Report

Finally, there was confusion during the meeting regarding the City's annual water quality report, the Consumer Confidence Report which we have since been able to clarify.

The City of Flint issued two separate Consumer Confidence Reports (CCR's) in 2015 covering the water quality data from 2014. One report was for the period of January – April 2014 when the City was obtaining water from Detroit (DWSD). And a second report was for the period April – December 2014 when the City was using the Flint River and its own Water Treatment Plant.

The CCR for DWSD water was mailed to customers in June. The Flint River based CCR was mailed to customers in mid-July, delayed due to issues with the printing contractor. We agree that having two separate reports caused confusion. We are working with the City to ensure both reports are posted to the City's website and both are made available when requested by customers. Should the City choose to create separate CCR's during the year that the City of Flint connects to the Karegnondi Water Authority we will work with the City to provide more clarity and try to have all material included in a single mailing.

The DWSD based CCR is the one community members had at the meeting, while the DEQ brought a copy of the Flint River based CCR. As separate and distinct sampling was done under each source, this explains the discrepancy in the values and monitoring periods being reported in the respective CCR's.

We appreciate your interest in these matters and hope this has addressed many of the questions brought up during our meeting. I would like to provide this information to both Dr. Sullivan and Ms. Mayes, but I do not have their contact information. I'm hoping you can share this with them and any others that may be interested.

Sincerely,

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543



## Thelen, Mary Beth (DEQ)

---

**From:** Shaler, Karen (DEQ)  
**Sent:** Tuesday, December 08, 2015 8:32 AM  
**To:** Wyant, Dan (DEQ); Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Davis, Donna (DNR); McDonald, Paul (DEQ); Beaulac, Michael (DEQ); Sporer, Bonita (DEQ); Eyer, Tamara (DEQ); Price, Lisa (MCSC); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ); Slater, Donna (DNR)  
**Cc:** Merricle, Jennifer (DTMB); Rosales, Manny (DTMB)  
**Subject:** FW: Request for Email log Case: 1512-1099

DTMB OA/Messaging was able to determine that Liane's August 25 e-mail to Lee-Anne Walters was successfully delivered (see yellow highlighted text, below).

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**From:** Glonski, Tom (DTMB)  
**Sent:** Tuesday, December 08, 2015 7:53 AM  
**To:** Shaler, Karen (DEQ)  
**Cc:** Vega, Dave (DTMB); Lee, Timothy (DTMB)  
**Subject:** Request for Email log Case: 1512-1099

From OA/Messaging:

Tom, Part I proves that the email was successfully delivered to the gmail.com system while Part II shows the subject line:

Part I

----- MAILTRACE.LOG.20150825.0001

----- MAILTRACE.LOG.20150825.0002

2015/08/25 13:47:15 GMT-04:00 890001e60001b242@Michigan.gov 0 0  
SHEKTERL@michigan.gov Mike.OMalley@STServices.com;MCOLEMAN@WadeTrim.com;bballard@mi-water.org;spitzleyh2o@hotmail.com;ccirving@ftch.com Message<890001e60001b242@Michigan.gov> accepted from [10.42.92.167] to [<Mike.OMalley@STServices.com>;<MCOLEMAN@WadeTrim.com>;<bballard@mi-water.org>;<spitzleyh2o@hotmail.com>;<ccirving@ftch.com>;].

2015/08/25 13:47:17 GMT-04:00 890001e60001b242@Michigan.gov 1 256  
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MAILTRACE.LOG.20150825.0003

Part II

POLEV.T.IMSS.20150825.0001

2015/08/25 13:47:15 GMT-04:00 917D18D4-3EE1-4CA1-A36B-A0B9DAF57F90 SHEKTERL@michigan.gov  
 Mike.OMalley@STServices.com;MCOLEMAN@WadeTrim.com;bballard@mi-  
 water.org;spitzleyh2o@hotmail.com;ccirving@ftch.com Follow up from July Board meeting 2  
 0000000000000 13.740234 00100000000000 0.000000 1 0  
 0 0 0 0 <890001e60001b242@Michigan.gov> 0 0  
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2015/08/25 13:55:57 GMT-04:00 0645B8D1-FB70-4E02-A6B2-E33F14F9D261 SHEKTERL@michigan.gov  
 lwalters313@gmail.com Follow Up from our Aug. 4th meeting 2 0000000000000  
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POLEV.T.IMSS.20150825.0002

Thomas Glomski  
 Security Analyst  
 Michigan Security Operations Center (MiSOC)  
 DTMB, Michigan Cyber Security  
 Desk Phone (517) 241-7067  
 MiSOC Central number (517) 335-1722

Confidentiality Notice: This message, including any attachments, is intended solely for the use of the named recipient (s) and may contain confidential and / or privileged information. Any unauthorized review, use, disclosure or distribution of this communication is expressly prohibited. If you are not the intended recipient, please contact the sender by reply email and destroy any and all copies of the original message

## Thelen, Mary Beth (DEQ)

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**From:** Lyon, Nick (DHHS)  
**Sent:** Friday, December 11, 2015 7:45 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Lasher, GERALYN (DHHS)  
**Subject:** Fwd: Flint Briefing 9Dec15  
**Attachments:** ATT00001.htm; 2015-12-09 - Flint Lead MDHHS Sitrep.pdf; ATT00002.htm

Dan - Here is the latest from DHHS.



Begin forwarded message:

**From:** "Bouters, Janese (DHHS)" <BoutersJ@michigan.gov>  
**Date:** December 10, 2015 at 12:38:58 PM EST  
**To:** "Anderson, Paula (DHHS)" <AndersonP3@michigan.gov>, "Barr, Jacqui (DHHS)" <BarrJ3@michigan.gov>, "Becker, Timothy (DHHS)" <beckert1@michigan.gov>, "Bruneau, Michelle (DHHS)" <BruneauM@michigan.gov>, "Colston, Leslie (DHHS)" <ColstonL@michigan.gov>, "DeMyers, Deborah (DHHS)" <DeMyersD@michigan.gov>, "Dykema, Linda D. (DHHS)" <DykemaL@michigan.gov>, "Eggleston, Debbie (DHHS)" <egglestond@michigan.gov>, "Eisner, Jennifer (DHHS)" <EisnerJ@michigan.gov>, "Granger, Patricia (DHHS)" <GrangerP@michigan.gov>, "Grijalva, Nancy (DHHS)" <GrijalvaN@michigan.gov>, "Groetsch, Kory J. (DHHS)" <GroetschK@michigan.gov>, "Harvey, Janice (DHHS)" <HarveyJ1@michigan.gov>, "Hertel, Elizabeth (DHHS)" <HertelE@michigan.gov>, "Kaiser Van Dam, Paula (DHHS)" <KaiserP@michigan.gov>, "Lasher, GERALYN (DHHS)" <lasherg@michigan.gov>, "Lyon, Nick (DHHS)" <LyonN2@michigan.gov>, "McKane, Patricia (DHHS)" <McKaneP@michigan.gov>, "Miller, Corinne (DHHS)" <MillerC39@michigan.gov>, "Miller, Mark (DHHS)" <millerm1@michigan.gov>, "Minicuci, Angela (DHHS)" <MinicuciA@michigan.gov>, "Moran, Susan (DHHS)" <MoranS@michigan.gov>, "Peeler, Nancy (DHHS)" <PeelerN@michigan.gov>, "Priem, Wesley F. (DHHS)" <priemw@michigan.gov>, "Priest, Chris (DHHS)" <PriestC1@michigan.gov>, "Ridley, Nancy (DHHS)" <RidleyN@michigan.gov>, "Robinson, Mikelle (DHHS)" <RobinsonM18@michigan.gov>, "Rockefeller, Cheryl (DHHS)" <RockefellerC@michigan.gov>, "Scott, Jackie (DHHS)" <ScottJ14@michigan.gov>, "Shah, Sandip (DHHS)" <shahs@michigan.gov>, "Sims, Teri (DHHS)" <SimsT2@michigan.gov>, "Stanbury, Martha (DHHS)" <stanburym@michigan.gov>, "Stiffler, Kathleen A. (DHHS)" <StifflerK@michigan.gov>, "Taylor, Kerri (DHHS)" <TaylorK10@michigan.gov>, "Thompson, Sheryl D. (DHHS)" <ThompsonS2@michigan.gov>, "Titus, Laura (DHHS)" <TitusL@michigan.gov>, "Travis, Rashmi (DHHS)" <TravisR@michigan.gov>, "Wells, Eden (DHHS)" <WellsE3@michigan.gov>  
**Subject:** Flint Briefing 9Dec15

*Sending on behalf of the PHCSA:*

Attached is the MDHHS daily situation report for the Flint water lead project.

Thanks,

**Janese Bouters**

Executive Secretary to Corinne Miller  
Bureau of Disease Control, Prevention and Epidemiology  
Michigan Department of Health & Human Services  
201 Townsend Street  
Lansing, Michigan 48913  
Phone: (517) 335-8731  
Fax: (517) 335-8263

**Flint Water Lead Project**  
**Michigan Department of Health and Human Services**  
**Situation Report for December 9, 2015**

**\*\*NOTE: Contains potentially Identifiable Information- REDACT AS INDICATED\*\***  
**New items for the day listed first and in bold print.**

**Daily Briefing and Situation Report prepared by Linda Dykema**

Surveillance Indicators: People Tested 10/1/2015 to 12/4/2015: 1,836;  
Children less than 6 years old  $\geq 5 \mu\text{g/dl}$  since 10/1/2015: 19  
Children 6 to 17 years old  $\geq 5 \mu\text{g/dl}$  since 10/1/2015: 8  
Adults 18 years and older  $\geq 5 \mu\text{g/dl}$  since 10/1/2015: 12  
Severity Indicators: Hospitalized/Discharged-1/1; Deaths- 0

**DAILY ACTIVITY SUMMARY**

**Elevated Blood Level (EBL) Environmental Investigations** – ETC Contractors, Wes Priem, Courtney Wisinski

- 5 EBL investigations completed.
- **10 investigations scheduled.**
- EBL investigation for high EBLL home completed on Friday 12/4/15. Unpaid taxes must be resolved to qualify for Lead Safe Home abatement. Project staff will work with family to resolve.

**MDHHS/Genesee County Health Department (GCHD) Case Management (CM) Services** – Nancy Peeler

- CM report through 12/04/15:
  - # of contacts attempted: 171
  - # offered CM: 68
  - # CM started: 10
  - # of children receiving CM who live in Flint: 10
  - # billed to Medicaid: 3
  - # other disposition: 4 (3 children moved to Oakland County, 1 to Tuscola County): Working with M. Miller and Counties to set up CM for children that have moved out of Flint.
- Held weekly status call with GCHD CM staff. CM nurses are encountering multiple complexities in gaining access to families/homes including: family has moved out of Flint; parent needs to get permission from property owner (sometimes other relative) before allowing home visits, requests for more information and time to make a decision; some families don't want a 6 hour visit for both CM and environmental investigation. HHS project staff will discuss options on 12/10/15.
- Child with EBLL of 52  $\mu\text{g/dl}$ : blood level has decreased to 28  $\mu\text{g/dl}$  per confirmed lab report.

**Epidemiology/Surveillance** – Patti McKane, Martha Stanbury, Bob Scott, Jessica Cooper, Karen Lishinski

- Forwarded Data Use Agreement with Hurley Medical Center for HHS legal review.
- Compiled Flint blood lead testing data through 12/4/2015. Final draft report conveyed to HHS Communications.
- Preparing 2014 lead surveillance data by Michigan zip code in response to media requests.
- EPA, CDC, MDHHS, local health department call scheduled for later this week to discuss Legionellosis.

#### Filter Distribution Sheryl Thompson

- November Distribution
  - 778 Filters
  - 63 Pitchers
  - 924 Replacement Filters
- Total Distribution since October 1, 2015
  - 10,951 Filters
  - 184 Pitchers
  - 924 Replacement Filters

#### Communications/Information Sharing – Linda Dykema, Eden Wells

- Weekly (Tues. 8:00 am) coordination call with DEQ/LARA/HHS.

#### Health Education Resources Updates - Michelle Bruneau, Emily Houk

- Continuing to write and coordinate additions to the EBL Case Manager Binder, now known as the MDHHS Lead Safe Family Guide Book.
- Filled out publications forms for Phosphate fact sheet and Bath Time poster and submitted for approval on 12/9.
- Pending: Aerator/Filter Maintenance Fact Sheet; Flint Parent Letter re-do in partnership with Emily Houk.

#### Toxicology - Kory Groetsch, Jennifer Gray

- Met with Genesee County Health Department staff to discuss phosphate public health questions.
- Revised EBL Investigation water sampling protocol in response to EPA comments and conveyed to DEQ.
- Collaborating with Surveillance, CM, and EBL response staff to develop a Data Dictionary and Database to track services provided to EBL children/families.

#### WIC

- Letter sent 11/24 to GCHD about Ready-to-feed formula availability from WIC program
- Talking points for WIC staff and for providers shared

#### Healthcare/Providers

- Drafted HAN to Flint healthcare providers for review by the project communications team and GCHD. The HAN encourages enhanced BLL testing for children less than six, particularly outside of the 1 and 2 years of age that are required by Medicaid.

#### DEQ Information - Linda Dykema as Liaison

- DEQ is requesting Phosphate fact sheet as phosphate dosing of Flint water has started.
- DEQ has requests to test 8 more Flint area schools. Testing will take place after all Flint public school buildings are completed in late December.
- DEQ developing a plan to retest school fixtures after replacement.

## **Thelen, Mary Beth (DEQ)**

---

**From:** Baird, Richard (GOV)  
**Sent:** Wednesday, December 16, 2015 11:46 AM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)  
**Subject:** FW: Flint Task Force Letter  
**Attachments:** 15.12.15 Flint Task Force Letter.pdf

**From:** Hansen, Rachel (GOV)  
**Sent:** Tuesday, December 15, 2015 2:51 PM  
**To:** Baird, Richard (GOV)  
**Cc:** Manolakoudis, Virginia (GOV)  
**Subject:** Flint Task Force Letter

Attached. I'll be bringing it to Virginia in a moment

Sincerely,

Rachel Hansen  
Administrative Assistant to the Governor  
Office of Governor Rick Snyder  
517-373-2340  
[Hansenr3@michigan.gov](mailto:Hansenr3@michigan.gov)



STATE OF MICHIGAN  
EXECUTIVE OFFICE  
LANSING

RICK SNYDER  
GOVERNOR

BRIAN CALLEY  
LT. GOVERNOR

December 15, 2015

Dear Flint Water Advisory Task Force Members:

Thank you for your correspondence on Dec. 7, and, most importantly, for your hard work to promote public health and protect our residents as we move forward. Your efforts are both respected and appreciated.

As acknowledged in your letter, we have taken many steps to address the challenges in Flint as they relate to reducing lead exposure. I am pleased to see the progress since October, and recognize there is more work that must be done to ensure that this progress continues.

At the state level, there has been a confluence of efforts between Departments of Environmental Quality and the Department of Health and Human Services to coordinate with the Genesee County Health Department, local schools, and our partners in the non-profit community.

These partners are making progress, and we know we must always strive to improve practices and communication for continual improvement.

You make a solid recommendation to establish a person who is independent of any one of the involved state agencies to serve as the point person to coordinate the ongoing work. I am recommending that Harvey Hollins, director of the Office of Urban Initiatives, carry out this effort. Harvey is well-versed in the issues and the challenges faced by our cities and will be effective in this role. Senior members of our executive team will continue to engage with your task force and provide direction and support to Harvey to ensure you will have continued support and cooperation. We also have retained Chris DeWitt, a veteran communications specialist, to strengthen community outreach efforts to make sure residents have access to the information they need.

I also support your suggestion of a dashboard to make information about our work and progress more accessible to the Flint community. These are critical measures that can be used as we look the challenges and progress in Flint, but also can be a part of efforts moving forward in other areas of our state. It's important that people have confidence that we are working to address any problems and will take the necessary actions to improve interaction among city, state and federal agencies. We also will continue to work with the medical community to consider how we can work together on wraparound needs of children who might experience health problems.

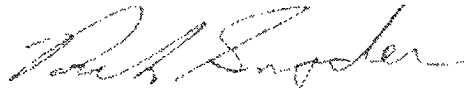
December 15, 2015

Page 2

People in Flint and across our state deserve safe, clean water. I want them to be confident that the water coming out of their tap is safe for their families. And I want them to trust that their government – at all levels – is working effectively to protect them.

I thank you again for investing your time and expertise in this vitally important effort.

Sincerely,

A handwritten signature in dark ink, appearing to read "Rick Snyder", written in a cursive style.

Rick Snyder  
Governor



12/30/15

Copies to:

orig:

Director Keith Creagh

Jim Sygo

Maggie Pallone

Madhu Anderson

Amy Epkey

George Krisztian

2-1 AG's File

3-1 MI Legislative File

Executive Division - City of Flint File (MBT)

We received the attached copy from the Attorney General's Office.

If you feel this needs further distribution, please let me know or handle as you feel appropriate.

Thank you.

Mary Beth

STATE OF MICHIGAN  
DEPARTMENT OF ATTORNEY GENERAL



BILL SCHUETTE  
ATTORNEY GENERAL

P.O. Box 30212  
LANSING, MICHIGAN 48909

December 22, 2015

Honorable Sheldon A. Neeley  
State Representative  
State Capitol  
P.O. Box 30014  
Lansing, MI 48909-7514

Re: Flint drinking water issues

Dear Representative Neeley:

The Attorney General wanted me to express his appreciation for taking the time to speak to him and his team this afternoon regarding the drinking water issues in the City of Flint. He was pleased to hear your perspective on this important public health issue.

As he noted on the call, the Attorney General has been monitoring this situation since he first became aware of Flint's drinking water issues, and shares your concern with the health of Flint's citizens and their access to a safe water supply. That is why he fully supported the decision in October to return Flint to the Detroit water system, and provide state funding for that purpose.

On the call today, and in your prior letter, you expressed concern about state and city officials' responses to the problems with Flint's drinking water that followed the switch from the Detroit water system to the Flint River. As we discussed, in the last few months several actions have been taken related to the Flint water situation:

- The Auditor General, who was already conducting an audit of the Department of Environmental Quality's drinking water program, expanded that audit to specifically review that program's response to the problems with Flint's drinking water.
- Governor Snyder created the Flint Water Task Force to independently review the state and local governments' response to the problems with Flint's drinking water.
- The U.S. Environmental Protection Agency announced it would review the response to the problems with Flint's drinking water at the request of Congressman Kildee.

Neeley, Honorable Sheldon

Page 2

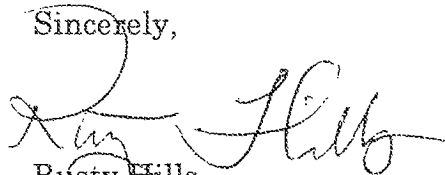
December 22, 2015

- The U.S. Environmental Protection Agency issued a memorandum on November 3, 2015 stating that there were "differing possible interpretations" of the relevant federal Safe Drinking Water Act regulations, "which may have led to some uncertainty with respect to the Flint water system." As a result, the agency clarified the application of those regulations going forward.
- The U.S. Environmental Protection Agency's National Drinking Water Advisory Council is conducting hearings to determine if changes are necessary to the Safe Drinking Water Act regulations in order to more fully protect individuals from lead in drinking water.
- A federal class action lawsuit was filed against the Governor, the State of Michigan, and several individual Department of Environmental Quality employees, along with the City of Flint, its emergency managers, and several of its individual employees, claiming that these parties violated federal drinking water regulations.
- Several parties sent a notice of intent to sue to the State, asserting that they would file a lawsuit under the federal Safe Drinking Water Act.

As the Attorney General explained, given the multiple reviews by federal and state agencies, and the pending and potential federal court actions, we do not believe it necessary to conduct an additional investigation. But this office will continue to actively monitor the situation and review any additional information brought forward. We also look forward to a continuing dialogue with your office, including speaking with Mr. Edwards about the bills you identified in our call.

Again, thank you for taking the time to discuss this important issue with the Attorney General.

Sincerely,



Rusty Hills  
Senior Advisor  
Executive Division  
(517) 373-8060

GJH:bmh

cc: Governor Rick Snyder  
✓ Dan Wyant, DEQ Director

**Shaler, Karen (DEQ)**

---

**From:** Shaler, Karen (DEQ)  
**Sent:** Monday, December 21, 2015 5:36 PM  
**To:** Wyant, Dan (DEQ); Sygo, Jim (DEQ); Anderson, Madhu (DEQ); Epkey, Amy (DEQ); Wurfel, Brad (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Delivery Confirmation of Liane Shekter Smith's August 25, 2015, E-Mail to LeeAnne Walters

FYI

---

**From:** Shaler, Karen (DEQ)  
**Sent:** Monday, December 21, 2015 5:35 PM  
**To:** edwardsm@vt.edu  
**Cc:** 'chris@environmentalcouncil.org'  
**Subject:** Delivery Confirmation of Liane Shekter Smith's August 25, 2015, E-Mail to LeeAnne Walters

Dear Marc Edwards,

MDEQ Chief Deputy Director Jim Sygo asked the Michigan Department of Technology, Management and Budget (MDTMB) to confirm that Liane Shekter Smith's August 25, 2015, e-mail was sent from the State of Michigan system and was received by the recipient, LeeAnne Walters.

Below is MDTMB's confirmation that the e-mail was sent and successfully delivered on August 25, 2015 (see yellow highlighted text).

Karen Shaler, Management Assistant to  
 Chief Deputy Director Jim Sygo  
 Michigan Department of Environmental Quality  
 Constitution Hall, 6th Floor South  
 Phone: 517-284-6709  
 Fax: 517-241-7401  
[shalerk@michigan.gov](mailto:shalerk@michigan.gov)

---

**From:** Glonski, Tom (DTMB)  
**Sent:** Tuesday, December 08, 2015 7:53 AM  
**To:** Shaler, Karen (DEQ)  
**Cc:** Vega, Dave (DTMB); Lee, Timothy (DTMB)  
**Subject:** Request for Email log Case: 1512-1099

From OA/Messaging:

Tom, Part I proves that the email was successfully delivered to the gmail.com system while Part II shows the subject line.

Part I

not

Making you aware  
of this from Deon bo.

Keith,

1/6

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----- MAILTRACE.LOG.20150825.0001

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SHEKTERL@michigan.gov Mike.OMalley@STServices.com;MCOLEMAN@WadeTrim.com;bballard@mi-  
water.org;spitzleyh2o@hotmail.com;ccirving@ftch.com Message<890001e60001b242@Michigan.gov> accepted from  
[10.42.92.167] to [<Mike.OMalley@STServices.com>;<MCOLEMAN@WadeTrim.com>;<bballard@mi-  
water.org>;<spitzleyh2o@hotmail.com>;<ccirving@ftch.com>].

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2015/08/25 13:47:18 GMT-04:00 890001e60001b242@Michigan.gov 1 256  
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SHEKTERL@michigan.gov MCOLEMAN@WadeTrim.com Message<890001e60001b242@Michigan.gov>  
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SHEKTERL@michigan.gov Mike.OMalley@STServices.com Message<890001e60001b242@Michigan.gov>  
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2015/08/25 13:55:57 GMT-04:00 8907f79e0001b51a@Michigan.gov 0 0  
SHEKTERL@michigan.gov lwalters313@gmail.com Message<8907f79e0001b51a@Michigan.gov>  
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2015/08/25 13:55:58 GMT-04:00 8907f79e0001b51a@Michigan.gov 1 256  
SHEKTERL@michigan.gov lwalters313@gmail.com Message<8907f79e0001b51a@Michigan.gov>  
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## Part II

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Mike.OMalley@STServices.com;MCOLEMAN@WadeTrim.com;bballard@mi-  
water.org;spitzleyh2o@hotmail.com;ccirving@ftch.com Follow up from July Board meeting 2  
000000000000 13.740234 00100000000000 0.000000 1 0  
0 0 0 0 0 <890001e60001b242@Michigan.gov> 0 0  
0 0

2015/08/25 13:55:57 GMT-04:00 0645B8D1-FB70-4E02-A6B2-E33F14F9D261 SHEKTERL@michigan.gov  
lwalters313@gmail.com Follow Up from our Aug. 4th meeting 2 000000000000

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Thomas Glomski  
 Security Analyst  
 Michigan Security Operations Center (MiSOC)  
 DTMB, Michigan Cyber Security  
 Desk Phone (517) 241-7067  
 MiSOC Central number (517) 335-1722

Confidentiality Notice: This message, including any attachments, is intended solely for the use of the named recipient (s) and may contain confidential and / or privileged information. Any unauthorized review, use, disclosure or distribution of this communication is expressly prohibited. If you are not the intended recipient, please contact the sender by reply email and destroy any and all copies of the original message

## Thelen, Mary Beth (DEQ)

---

**From:** Shaler, Karen (DEQ)  
**Sent:** Tuesday, December 08, 2015 8:32 AM  
**To:** Wyant, Dan (DEQ); Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Davis, Donna (DNR); McDonald, Paul (DEQ); Beaulac, Michael (DEQ); Sporer, Bonita (DEQ); Eyer, Tamara (DEQ); Price, Lisa (MCSC); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ); Slater, Donna (DNR)  
**Cc:** Merricle, Jennifer (DTMB); Rosales, Manny (DTMB)  
**Subject:** FW: Request for Email log Case: 1512-1099

DTMB OA/Messaging was able to determine that Liane's August 25 e-mail to Lee-Anne Walters was successfully delivered (see yellow highlighted text, below).

---

**From:** Glomski, Tom (DTMB)  
**Sent:** Tuesday, December 08, 2015 7:53 AM  
**To:** Shaler, Karen (DEQ)  
**Cc:** Vega, Dave (DTMB); Lee, Timothy (DTMB)  
**Subject:** Request for Email log Case: 1512-1099

From OA/Messaging:

Tom, Part I proves that the email was successfully delivered to the gmail.com system while Part II shows the subject line.

Part I

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----- MAILTRACE.LOG.20150825.0001

----- MAILTRACE.LOG.20150825.0002

2015/08/25 13:47:15 GMT-04:00 890001e60001b242@Michigan.gov 0 0  
SHEKTERL@michigan.gov Mike.OMalley@STServices.com;MCOLEMAN@WadeTrim.com;bballard@mi-water.org;spitzleyh2o@hotmail.com;ccirving@ftch.com Message<890001e60001b242@Michigan.gov> accepted from [10.42.92.167] to [<Mike.OMalley@STServices.com>;<MCOLEMAN@WadeTrim.com>;<bballard@mi-water.org>;<spitzleyh2o@hotmail.com>;<ccirving@ftch.com>].

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SHEKTERL@michigan.gov ccirving@ftch.com Message<890001e60001b242@Michigan.gov> relayed through host[65.23.72.90] to [ccirving@ftch.com] successfully. 9FD841F4-EA17-4718-8CC1-8DD65CE8492B

2015/08/25 13:47:18 GMT-04:00 890001e60001b242@Michigan.gov 1 256  
SHEKTERL@michigan.gov spitzleyh2o@hotmail.com Message<890001e60001b242@Michigan.gov> relayed through host[134.170.2.199] to [spitzleyh2o@hotmail.com] successfully. 9FD841F4-EA17-4718-8CC1-8DD65CE8492B

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SHEKTERL@michigan.gov bballard@mi-water.org Message<890001e60001b242@Michigan.gov> relayed through host[207.46.163.247] to [bballard@mi-water.org] successfully. 9FD841F4-EA17-4718-8CC1-8DD65CE8492B

2015/08/25 13:47:21 GMT-04:00 890001e60001b242@Michigan.gov 1 256  
SHEKTERL@michigan.gov MCOLEMAN@WadeTrim.com Message<890001e60001b242@Michigan.gov> relayed through host[64.141.138.228] to [MCOLEMAN@WadeTrim.com] successfully. 9FD841F4-EA17-4718-8CC1-8DD65CE8492B



2015/08/25 13:47:23 GMT-04:00 890001e60001b242@Michigan.gov 1 256  
 SHEKTERL@michigan.gov Mike.OMalley@STServices.com Message<890001e60001b242@Michigan.gov>  
 relayed through host[207.46.163.215] to [Mike.OMalley@STServices.com] successfully. 9FD841F4-EA17-4718-8CC1-8DD65CE8492B

2015/08/25 13:55:57 GMT-04:00 8907f79e0001b51a@Michigan.gov 0 0  
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 accepted from [10.42.214.199] to [<lwalters313@gmail.com>].

2015/08/25 13:55:58 GMT-04:00 8907f79e0001b51a@Michigan.gov 1 256  
 SHEKTERL@michigan.gov lwalters313@gmail.com Message<8907f79e0001b51a@Michigan.gov>  
 relayed through host[74.125.201.27] to [lwalters313@gmail.com] successfully. E20141EC-E8F6-422D-BD9C-FFAB654CB858

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Part II

----- POLEVT.IMSS.20150825.0001

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 Mike.OMalley@STServices.com;MCOLEMAN@WadeTrim.com;bballard@mi-  
 water.org;spitzleyh2o@hotmail.com;ccirving@ftch.com Follow up from July Board meeting 2  
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2015/08/25 13:55:57 GMT-04:00 0645B8D1-FB70-4E02-A6B2-E33F14F9D261 SHEKTERL@michigan.gov  
 lwalters313@gmail.com Follow Up from our Aug. 4th meeting 2 0000000000000  
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----- POLEVT.IMSS.20150825.0002

Thomas Glomski  
 Security Analyst  
 Michigan Security Operations Center (MiSOC)  
 DTMB, Michigan Cyber Security  
 Desk Phone (517) 241-7067  
 MiSOC Central number (517) 335-1722

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**Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Friday, December 18, 2015 4:44 PM  
**To:** Chris Kolb  
**Cc:** Anderson, Madhu (DEQ)  
**Subject:** Re: Marc Edwards FOIA Request

*Karen,  
Please note.  
Coordinate w/  
Madhu*

Chris,

You are welcome. I will be sure to copy you.

Sent from my iPhone

On Dec 18, 2015, at 4:06 PM, Chris Kolb <[chris@environmentalcouncil.org](mailto:chris@environmentalcouncil.org)> wrote:

Dan,

I just wanted to remind you to copy me on the FOIA material that Marc Edwards requested, so I know it goes out. I appreciate your taking care of this matter.

Thanks,  
Chris

--

Chris Kolb, President & CEO  
Michigan Environmental Council  
602 W. Ionia  
Lansing, MI 48933

517.487.9539 (office)  
517.487.9541 (fax)  
734.277.1536 (cell)

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*Thw  
mt  
12/18*

## **Busch, Stephen (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, August 25, 2015 1:56 PM  
**To:** lwalters313@gmail.com  
**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Follow Up from our Aug. 4th meeting

Dear Ms. Walters,

I wanted to update you regarding our Department's findings related to questions raised during our meeting at the Governor's office on August 4. I apologize for the delay in getting back to you.

### Lead and Copper Monitoring

Regarding Flint lead and copper compliance monitoring for the January – June 2015 period, the City has confirmed that all lead and copper samples collected throughout the City, whether routine sites or customer requests, were sent to the State of Michigan lab for analysis. Individual sample results are provided to the property owner within 30 days of receiving the lab results in accordance with the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 410(5)). Results from the State of Michigan lab are provided directly to our Office.

Staff have confirmed that the lead 90<sup>th</sup> percentile compliance calculation of 11 parts per billion is based on 69 samples that met the appropriate sampling location site criteria, and met the sample collection site and collection protocol requirements of the Safe Drinking Water Act for this monitoring period. A minimum of 60 samples were required for this monitoring period. As indicated during the meeting, the City's sampling for lead complies with the Action Level standard of 15 parts per billion, but based on the population served by the City and these results, the City will need to make a recommendation to the MDEQ on how they will fully optimize their corrosion control treatment. These next steps continue to follow the requirements of the Lead and Copper Rule.

Samples collected at your residence of 212 Browning Avenue were not included this compliance determination as you utilize a whole home filter. As stated in the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 710a, Lead and Copper in tap water; monitoring requirements) "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment alters the water chemistry and water quality such that it is no longer representative of public water from the City's distribution system. Therefore, the City cannot use samples collected at your residence as part of its determination for public water system compliance with the lead or copper action level standard.

### Sample Summary (samples taken at your residence)

For your information, we are providing the information that we've gathered regarding samples collected at your home. Our records indicate between February and June of this year there were six samples collected by either you or Mr. Mike Glasgow with the City of Flint, and submitted to the State Laboratory for analysis as follows:

February 11, Bathroom tap, collected at 10:20 AM by Mike Glasgow. This sample was analyzed for aesthetic metals (copper, iron, manganese, and zinc) which does not include lead analysis.

February 18, Kitchen tap, collected at 7:15 AM by you. This sample was analyzed for lead (104 parts per billion) and copper (non-detect).

February 25, Kitchen tap, collected at 10:26 AM by Mike Glasgow. This sample was analyzed for metals including lead. All results (including lead) were non-detect except for Barium 0.01 parts per million. The result for Barium was well below its maximum contaminant level of 2 parts per million.

March 3, Kitchen tap, collected at 6:00 AM by you. This sample was analyzed for lead (397 parts per billion) and copper (non-detect).

March 18, Kitchen tap, collected at 11:10 AM by Mike Glasgow. This sample was analyzed for lead (4 parts per billion) and copper (non-detect).

April 2, Pre-point of service, collected at 8:00 AM by you. This sample was analyzed for lead (707 parts per billion) and copper (110 parts per billion).

#### Lead Education/Outreach

As we discussed during the meeting, we support efforts to educate homeowners about the sources of lead in their private residence, provide guidance measures to reduce the potential for lead exposure, and provide information on resources for lead abatement. Along those lines, our Office has been in contact with the Department of Health and Human Services, Environmental Health Division, Healthy Homes Section and had some preliminary discussions about a public education and assistance campaign regarding household lead issues, guidance and abatement.

*Lead monitoring by public water systems serves a dual purpose. The first purpose is to ensure the public water supply is adequately treating its water to address corrosion potential and help limit lead exposure. The second purpose is to inform homeowners about lead levels within their individual residence so that they can make educated choices regarding their own exposure risk.*

#### pH Results

During the meeting concerns were also expressed regarding pH levels within customer plumbing systems. As you may know, pH has no associated contaminant level as it is simply a numeric scale used to specify the acidity or alkalinity of a solution. The City of Flint conducts daily monitoring of pH values on both its raw and finished (treated) water at the City's water treatment plant as part of its operations. The City is also required to conduct water quality parameter monitoring in the distribution system, which includes pH. Samples are analyzed in accordance with Standard Methods using properly calibrated analytical equipment. Results for pH from these samples are summarized below.

Since late April 2014 – June 2015, the following pH conditions were reported:

Water Treatment Plant – Finished Water plant tap pH range = 7.07 minimum to 9.9 maximum, overall average 7.7, measured daily. We believe the 9.9 is a one-time anomaly from softening treatment.

Distribution System – Water Quality Parameters taken from 25 sample sites located throughout and monitored quarterly

July – Sept. 2014: pH 7.71 average, range 7.56 – 7.86

Oct. – Dec. 2014: pH 7.88 average, range 7.62 – 8.10

Jan. – March 2015: pH 7.81 average, range 7.60 – 7.99

April – June 2015: pH 7.63 Average, range 7.48 – 7.80

In addition, the City's treated water contains alkalinity, which is a measurement of the buffering capacity of water to resist a change in pH. As you can see from the water quality parameter monitoring results above there has been very little change in pH within the City's distribution system. The pH levels described within customer site piping or premise plumbing systems are believed to be the result of onsite treatment and not representative of water quality shown to be occurring in the public water supply system.

Consumer Confidence Report

Finally, there was confusion during the meeting regarding the City's annual water quality report, the Consumer Confidence Report which we have since been able to clarify.

The City of Flint issued two separate Consumer Confidence Reports (CCR's) in 2015 covering the water quality data from 2014. One report was for the period of January – April 2014 when the City was obtaining water from Detroit (DWSD). And a second report was for the period April – December 2014 when the City was using the Flint River and its own Water Treatment Plant.

The CCR for DWSD water was mailed to customers in June. The Flint River based CCR was mailed to customers in mid-July, delayed due to issues with the printing contractor. We agree that having two separate reports caused confusion. We are working with the City to ensure both reports are posted to the City's website and both are made available when requested by customers. Should the City choose to create separate CCR's during the year that the City of Flint connects to the Karegnondi Water Authority we will work with the City to provide more clarity and try to have all material included in a single mailing.

The DWSD based CCR is the one community members had at the meeting, while the DEQ brought a copy of the Flint River based CCR. As separate and distinct sampling was done under each source, this explains the discrepancy in the values and monitoring periods being reported in the respective CCR's.

We appreciate your interest in these matters and hope this has addressed many of the questions brought up during our meeting. I would like to provide this information to both Dr. Sullivan and Ms. Mayes, but I do not have their contact information. I'm hoping you can share this with them and any others that may be interested.

Sincerely,

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

**Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Monday, December 14, 2015 3:42 PM  
**To:** Lori Gliha (Lori.Gliha@aljazeera.net)  
**Cc:** Wurfel, Brad (DEQ); Krisztian, George (DEQ)  
**Subject:** FW: FOLLOW UP QUESTIONS  
**Attachments:** Resident\_Sampling\_Instructions-12-11-2015\_508290\_7.pdf

**Importance:** High

Dear Lori,

This is in response to your second email of December 11, 2015, please see below.

**Your Questions**

In our interview, you said the following, "Simply said, the protocol that we were using - I do not believe it is protective of public health and therefore more needs to be done in our testing protocol to ensure that we're identifying risk. We're addressing lead exposure and we are dealing with the issue proactively. Flint deserves safe drinking water."

Are you referring to the method by which the state was testing for lead in the water when you use the word protocol in this statement?

**DEQ Answer:**

What was meant by this statement is that the lead and copper rule, as written, was designed to assess the effectiveness of corrosion control measures utilized by a water supply. It was not designed to determine individual health exposure risks.

As a result the DEQ has become very proactive in engaging all of our partners to address health exposure concerns. The testing that is currently being done in the Flint Schools is very rigorous and goes well beyond any regulatory requirements. We typically take approximately 200-300 samples at each school in a single sampling event. We are evaluating the water mains, the piping throughout the building as well as the components used such as the solder and fixtures. The good news is that the testing so far indicates that the issues in the schools are predominantly fixture related and they are not deep in the plumbing, so the fixes are going to be relatively straight forward.

Once we have completed our evaluation we will use what we have learned to create guidance for all of the schools in the State of Michigan. In addition we will share our information with the U.S. EPA and we will partner with them to develop protocols that go beyond corrosion control and focus on health exposure.

Thank you.

Dan Wyant  
Director  
517-284-6700

**From:** Wyant, Dan (DEQ)  
**Sent:** Monday, December 14, 2015 3:30 PM

**To:** Lori Gliha (Lori.Gliha@aljazeera.net)  
**Cc:** Wurfel, Brad (DEQ); Krisztian, George (DEQ)  
**Subject:** FW: FOLLOW UP QUESTIONS  
**Importance:** High

Dear Lori,

Per your email questions of December 11, 2015, we are providing you with the following answers:

**Your Questions:**

1 – What is the current method that the state is using to test the water in Flint?

How, specifically, is it different (or the same as) the testing that occurred prior to the public recognition of a lead risk in the water?

Does pre-flushing occur now?

Is the state using wide-mouthed bottles or narrow bottles?

Is the water sampled?

In our interview, you said the following, "Simply said, the protocol that we were using - I do not believe it is protective of public health and therefore more needs to be done in our testing protocol to ensure that we're identifying risk. We're addressing lead exposure and we are dealing with the issue proactively. Flint deserves safe drinking water."

Are you referring to the method by which the state was testing for lead in the water when you use the word protocol in this statement? (Please see second email response)

**Department of Environmental Quality (DEQ) Answers:**

It is important to note that the protocol that the DEQ utilizes for assessing corrosion control is compliant with the lead and copper rule. The lead and copper rule does not include requirements with respect to issues such as bottle mouth size, flow rate and other such issues.

We have recently revised the sampling instructions and submitted them to the United States Environmental Protection Agency (U.S. EPA) for review. The U.S. EPA has since reviewed the instructions and has indicated that they agree with the revised instructions. A copy of these instructions is attached for your convenience.

We understand that there has been some discussion regarding flow rates and other related sampling issues and we will be evaluating these factors in a scientific manner to determine what, if any, affect these variables have. We believe that an open peer review investigation of these issues with samples analyzed by a lab certified under the auspices of the Safe Drinking Water Act is the best way for everyone to benefit. There are many partners involved in this issue and we want to ensure that the voices of all affected parties are represented.

Finally it is important to understand that corrosion control evaluations and sampling for health exposure assessments are not the same thing. The protocols that have been developed for the testing of the schools and for home exposure investigations are very extensive. These protocols utilize many samples at one location and are specifically designed to evaluate sources of lead within that school or home. These sources may include lead service lines, lead solder, brass fixtures that contain lead and other potential sources.

**Your Question:**

2 – When you admitted a mistake in the "proper protocol," in October, were you referencing more than one specific protocol, or just the lack of corrosion control?

**DEQ Answer:**

The mistakes that were made were primarily with respect to the tone that was used initially in our responses. The U.S. EPA has stated that there are ambiguities in the lead and copper rule and that the rule was open to interpretation. Both the sampling and corrosion control evaluation process were acceptable under the lead and copper rule.

We are currently focused on moving forward. We have developed a plan for moving forward and we are well on our way. We look forward to working with all of our partners so that the faith of the residents of Flint can be restored.

If you have need any further information, please let me know.

Thank you.

Dan Wyant  
Director  
517-284-6700

**From:** Lori Gliha [<mailto:Lori.Gliha@aljazeera.net>]  
**Sent:** Friday, December 11, 2015 11:36 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Wurfel, Brad (DEQ); Sameen Amin  
**Subject:** FOLLOW UP QUEST

Dear Mr. Wyant,

Thank you again, for sitting down with us for an interview regarding the water crisis in Flint.

I have a couple of quick questions to clarify if you can please help answer these today:

1 – What is the current method that the state is using to test the water in Flint?

How, specifically, is it different (or the same as) the testing that occurred prior to the public recognition of a lead risk in the water?

Does pre-flushing occur now?

Is the state using wide-mouthed bottles or narrow bottles?

Is the water sampled at a slow rate as it is coming from the faucet?

2 –When you admitted a mistake in the “proper protocol,” in October, were you referencing more than one specific protocol, or just the lack of corrosion control?

Thank you!

Sincerely,  
Lori Jane Gliha  
America Tonight  
Al Jazeera America  
(202) 997-1382



=====

=====  
From: Lori Gliha <Lori.Gliha@aljazeera.net>  
Date: December 11, 2015 at 10:52:44 AM CST  
To: "WYANTD@MICHIGAN.GOV" <WYANTD@MICHIGAN.GOV>  
Cc: "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, Sameen Amin <sameen.amin@aljazeera.net>  
Subject: one additional question...

Hi Mr. Wyant,

In addition to the last email I sent, I wanted to clarify one more comment you made to make sure I clearly understand to which "protocol" you were referring.

In our interview, you said the following, "Simply said, the protocol that we were using - I do not believe it is protective of public health and therefore more needs to be done in our testing protocol to ensure that we're identifying risk. We're addressing lead exposure and we are dealing with the issue proactively. Flint deserves safe drinking water."

Are you referring to the method by which the state was testing for lead in the water when you use the word protocol in this statement?

Thank you for your help with these three questions.  
Our story is scheduled to air December 16, at 9:30pm.

Sincerely,

Lori Jane Gliha  
America Tonight  
Al Jazeera America  
(202) 997-1382

-----

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Thank you!

Sincerely,  
Lori Jane Gliha  
America Tonight  
Al Jazeera America  
(202) 997-1382

---

**From:** Lori Gliha <Lori.Gliha@aljazeera.net>  
**Date:** December 11, 2015 at 10:52:44 AM CST  
**To:** "WYANTD@MICHIGAN.GOV" <WYANTD@MICHIGAN.GOV>  
**Cc:** "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, Sameen Amin <sameen.amin@aljazeera.net>  
**Subject:** one additional question...

Hi Mr. Wyant,

In addition to the last email I sent, I wanted to clarify one more comment you made to make sure I clearly understand to which "protocol" you were referring.

- In our interview, you said the following, "Simply said, the protocol that we were using - I do not believe it is protective of public health and therefore more needs to be done in our testing protocol to ensure that we're identifying risk. We're addressing lead exposure and we are dealing with the issue proactively. Flint deserves safe drinking water."
- Are you referring to the method by which the state was testing for lead in the water when you use the word protocol in this statement?

Thank you for your help with these three questions.  
Our story is scheduled to air December 16, at 9:30pm.

Sincerely,

Lori Jane Gliha  
America Tonight  
Al Jazeera America  
(202) 997-1382

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## DRINKING WATER LEAD AND COPPER SAMPLING INSTRUCTIONS

Dear Resident:

Thank you for helping to monitor for lead and copper in your drinking water. This sampling is required by the federal and state Safe Drinking Water Acts, and is being accomplished with the cooperation of homeowners, residents, and water system customers.

It is important that you follow these instructions so we obtain an accurate measurement of the lead and copper in your drinking water. This sample should represent the water you would typically drink and the faucet from where you drink the water. Select a faucet for sampling that was used the day before you intend to sample. Call your water supply if you have questions.

1. Water must sit idle in the pipes for an extended length of time before sampling. Therefore, do not use any water in the house for at least 6 hours before sampling. The best times to sample are early morning or after returning from work.
2. Select an unfiltered/untreated faucet in the **KITCHEN** or **BATHROOM** that is commonly used for drinking. **DO NOT** sample from a laundry sink or a hose spigot as these samples cannot be used for compliance. **DO NOT** use a faucet that has a filter attached to it unless you bypass the filter. **DO NOT** use a faucet that is connected to a home water treatment device (like a water softener, iron filter, reverse osmosis) unless you bypass the home water treatment device.
3. Place the open sample bottle below the faucet and gently open the **COLD** water tap. If you have a single handle faucet, turn it fully to the **COLD** side. Fill the sample bottle to the neck with the "first draw" of **COLD** water.
4. Tightly cap the sample bottle and place in the sample kit provided. Review the sample kit label to ensure all information contained on the label is complete and correct.
5. Answer the questions on the back of this form and sign the form.
6. Attach this form to the bottle and leave it outside your front door for pick-up.
7. Thank you again for your help. We will send you your individual results within 30 days of receiving them from the laboratory. A summary of information on this year's lead and copper monitoring will be printed in the annual water quality report that will be made available by July 1 of next year. Contact your water supply if you have questions.

If you have questions call:  
Water Supply: \_\_\_\_\_

Manager or  
Water Operator: \_\_\_\_\_

Phone: \_\_\_\_\_

Or Contact:  
Michigan Department of Environmental Quality

DEQ Contact: \_\_\_\_\_

Phone: \_\_\_\_\_

**TO BE COMPLETED BY RESIDENT/CUSTOMER**

A. Which faucet did you use to fill the bottle?

☐ Kitchen    ☐ Main bathroom    ☐ Other

If OTHER, please describe: \_\_\_\_\_  
\_\_\_\_\_

B. When was the faucet last used before sampling?

Date \_\_\_\_\_ TIME \_\_\_\_\_ AM/PM

Note: If the faucet has been idle more than 24 hours, we might not analyze your sample or be able to use your sample for compliance purposes.

C. When did you fill the bottle?

DATE \_\_\_\_\_ TIME \_\_\_\_\_ AM/PM

D. Is there a faucet mount filter?    ☐ YES    ☐ NO

If YES, was it bypassed?    ☐ YES    ☐ NO

E. Is this faucet connected to a home treatment device such as a water softener, a reverse osmosis unit, an iron removal device OR is any kind of additive used in the home?    ☐ YES    ☐ NO

If YES, please describe: \_\_\_\_\_  
\_\_\_\_\_

Note: If you have a home treatment device OR any kind of additive is used, it is possible we might not analyze your sample or be able to use your sample for compliance purposes.

F. If any plumbing repairs or replacement has been done in the home since the previous sampling event, please note this information here:

If YES, please describe: \_\_\_\_\_  
\_\_\_\_\_

I have read the Drinking Water Lead and Copper Sampling Instructions and have taken a tap sample in accordance with these directions.

\_\_\_\_\_  
Signature

## **Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Monday, December 14, 2015 3:30 PM  
**To:** Lori Gliha (Lori.Gliha@aljazeera.net)  
**Cc:** Wurfel, Brad (DEQ); Krisztian, George (DEQ)  
**Subject:** FW: FOLLOW UP QUESTIONS  
**Attachments:** Resident\_Sampling\_Instructions-12-11-2015\_508290\_7.pdf  
  
**Importance:** High

Dear Lori,

Per your email questions of December 11, 2015, we are providing you with the following answers:

### **Your Questions:**

1 – What is the current method that the state is using to test the water in Flint?

How, specifically, is it different (or the same as) the testing that occurred prior to the public recognition of a lead risk in the water?

Does pre-flushing occur now?

Is the state using wide-mouthed bottles or narrow bottles?

Is the water sampled?

In our interview, you said the following, "Simply said, the protocol that we were using - I do not believe it is protective of public health and therefore more needs to be done in our testing protocol to ensure that we're identifying risk. We're addressing lead exposure and we are dealing with the issue proactively. Flint deserves safe drinking water."

Are you referring to the method by which the state was testing for lead in the water when you use the word protocol in this statement?

### **Department of Environmental Quality (DEQ) Answers:**

It is important to note that the protocol that the DEQ utilizes for assessing corrosion control is compliant with the lead and copper rule. The lead and copper rule does not include requirements with respect to issues such as bottle mouth size, flow rate and other such issues.

We have recently revised the sampling instructions and submitted them to the United States Environmental Protection Agency (U.S. EPA) for review. The U.S. EPA has since reviewed the instructions and has indicated that they agree with the revised instructions. A copy of these instructions is attached for your convenience.

We understand that there has been some discussion regarding flow rates and other related sampling issues and we will be evaluating these factors in a scientific manner to determine what, if any, affect these variables have. We believe that an open peer review investigation of these issues with samples analyzed by a lab certified under the auspices of the Safe Drinking Water Act is the best way for everyone to benefit. There are many partners involved in this issue and we want to ensure that the voices of all affected parties are represented.

Finally it is important to understand that corrosion control evaluations and sampling for health exposure assessments are not the same thing. The protocols that have been developed for the testing of the schools and for home exposure investigations are very extensive. These protocols

- utilize many samples at one location and are specifically designed to evaluate sources of lead within that school or home. These sources may include lead service lines, lead solder, brass fixtures that contain lead and other potential sources.

**Your Question:**

2 – When you admitted a mistake in the “proper protocol,” in October, were you referencing more than one specific protocol, or just the lack of corrosion control?

**DEQ Answer:**

The mistakes that were made were primarily with respect to the tone that was used initially in our responses. The U.S. EPA has stated that there are ambiguities in the lead and copper rule and that the rule was open to interpretation. Both the sampling and corrosion control evaluation process were acceptable under the lead and copper rule.

We are currently focused on moving forward. We have developed a plan for moving forward and we are well on our way. We look forward to working with all of our partners so that the faith of the residents of Flint can be restored.

If you have need any further information, please let me know.

Thank you.

Dan Wyant  
Director  
517-284-6700

**From:** Lori Gliha [<mailto:Lori.Gliha@aljazeera.net>]  
**Sent:** Friday, December 11, 2015 11:36 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Wurfel, Brad (DEQ); Sameen Amin  
**Subject:** FOLLOW UP QUEST

Dear Mr. Wyant,

Thank you again, for sitting down with us for an interview regarding the water crisis in Flint.

I have a couple of quick questions to clarify if you can please help answer these today:

1 – What is the current method that the state is using to test the water in Flint?

How, specifically, is it different (or the same as) the testing that occurred prior to the public recognition of a lead risk in the water?

Does pre-flushing occur now?

Is the state using wide-mouthed bottles or narrow bottles?

Is the water sampled at a slow rate as it is coming from the faucet?

2 –When you admitted a mistake in the “proper protocol,” in October, were you referencing more than one specific protocol, or just the lack of corrosion control?

**Thelen, Mary Beth (DEQ)**

---

**From:** Devereaux, Tracy Jo (DEQ)  
**Sent:** Tuesday, November 24, 2015 2:23 PM  
**To:** Thelen, Mary Beth (DEQ); Shekter Smith, Liane (DEQ)

## Attorney-Client Privilege

Here you go!

Thanks,

*Tracy Jo*

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, November 24, 2015 2:21 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)

**Attorney-Client Privilege**

Can you send me the latest version? I probably have it but overloaded with emails lately. Thanks.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, November 24, 2015 2:19 PM  
**To:** Kuhl, Richard (AG); Sygo, Jim (DEQ); Anderson, Madhu (DEQ); Pallone, Maggie (DEQ); Krisztian, George (DEQ)  
**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)

## Attorney-Client Privilege

# **Attorney-Client Privilege**



# **Attorney-Client Privilege**

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12/30/15

*Flint  
water  
file*

*Not sure if  
you saw this.  
mlb*

Copies to:

Director Keith Creagh

Jim Sygo

Maggie Pallone

Madhu Anderson

Amy Epkey

George Krisztian

2-1 AG's File

3-1 MI Legislative File

Executive Division - City of Flint File (MBT)

We received the attached copy from the  
Attorney General's Office.

If you feel this needs further distribution,  
please let me know or handle as you feel  
appropriate.

Thank you.

Mary Beth

STATE OF MICHIGAN  
DEPARTMENT OF ATTORNEY GENERAL



BILL SCHUETTE  
ATTORNEY GENERAL

P.O. Box 30212  
LANSING, MICHIGAN 48909

December 22, 2015

Honorable Sheldon A. Neeley  
State Representative  
State Capitol  
P.O. Box 30014  
Lansing, MI 48909-7514

Re: Flint drinking water issues

Dear Representative Neeley:

The Attorney General wanted me to express his appreciation for taking the time to speak to him and his team this afternoon regarding the drinking water issues in the City of Flint. He was pleased to hear your perspective on this important public health issue.

As he noted on the call, the Attorney General has been monitoring this situation since he first became aware of Flint's drinking water issues, and shares your concern with the health of Flint's citizens and their access to a safe water supply. That is why he fully supported the decision in October to return Flint to the Detroit water system, and provide state funding for that purpose.

On the call today, and in your prior letter, you expressed concern about state and city officials' responses to the problems with Flint's drinking water that followed the switch from the Detroit water system to the Flint River. As we discussed, in the last few months several actions have been taken related to the Flint water situation:

- The Auditor General, who was already conducting an audit of the Department of Environmental Quality's drinking water program, expanded that audit to specifically review that program's response to the problems with Flint's drinking water.
- Governor Snyder created the Flint Water Task Force to independently review the state and local governments' response to the problems with Flint's drinking water.
- The U.S. Environmental Protection Agency announced it would review the response to the problems with Flint's drinking water at the request of Congressman Kildee.

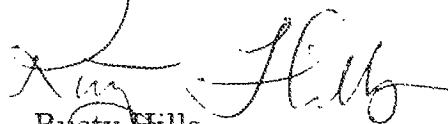
December 22, 2015

- The U.S. Environmental Protection Agency issued a memorandum on November 3, 2015 stating that there were "differing possible interpretations" of the relevant federal Safe Drinking Water Act regulations, "which may have led to some uncertainty with respect to the Flint water system." As a result, the agency clarified the application of those regulations going forward.
- The U.S. Environmental Protection Agency's National Drinking Water Advisory Council is conducting hearings to determine if changes are necessary to the Safe Drinking Water Act regulations in order to more fully protect individuals from lead in drinking water.
- A federal class action lawsuit was filed against the Governor, the State of Michigan, and several individual Department of Environmental Quality employees, along with the City of Flint, its emergency managers, and several of its individual employees, claiming that these parties violated federal drinking water regulations.
- Several parties sent a notice of intent to sue to the State, asserting that they would file a lawsuit under the federal Safe Drinking Water Act.

As the Attorney General explained, given the multiple reviews by federal and state agencies, and the pending and potential federal court actions, we do not believe it necessary to conduct an additional investigation. But this office will continue to actively monitor the situation and review any additional information brought forward. We also look forward to a continuing dialogue with your office, including speaking with Mr. Edwards about the bills you identified in our call.

Again, thank you for taking the time to discuss this important issue with the Attorney General.

Sincerely,



Rusty Hills  
Senior Advisor  
Executive Division  
(517) 373-8060

GJH:bmh

cc: ~~Governor Rick Snyder~~  
✓ Dan Wyant, DEQ Director

**RECEIVED**

**DEC 28 2015**

**EXECUTIVE DIVISION**  
Department of Environmental Quality

BILL SCHUETTE  
ATTORNEY GENERAL  
Lansing, Michigan 48913

Dan Wyant, Director  
Department of Environmental Quality  
Constitution Hall – 6th Floor South  
525 West Allegan Street  
P.O. Box 30473  
Lansing, MI 48909-7973

# **DEQ's 18 Point Partnering Plan**

## **1. After Action Plan (FAQ) will be ready by noon November 16, 2015**

- First version complete – updated as needed

## **2. School Test Data**

- School reports to be expedited
- Steve Busch creates summary reports
- George Krisztian creates summary spreadsheet

## **3. Blood exposure**

- DHHS is lead on providing data

## **4. Meeting with Mayor Karen Weaver**

- Harvey Hollins lead – Dan Wyant, Jim Sygo and George Krisztian to attend

## **5. Messaging our Partnering Plan**

- Provide ongoing public updates regarding Governor's 10 point plan
- Continue emphasis on the availability of free testing for Flint residents
- OEA to direct the Public to the "Flintwater" website

## **6. Sampling Protocol**

- Establish alignment with EPA Region 5 on sampling protocol

## **7. Lead service line replacement**

- Expand RLF directed at lead service line replacement
- Amy Epkey, Maggie Pallone and Sonya Butler

## **8. Partner with EPA**

- Jim Sygo → Bob Kaplan
- Dan Wyant → Susan Hedman
- Mike Prysby and Steve Busch → Darren Lytle and Mike Schock
- George Krisztian → Tom Burke
- ODWMA Staff → EPA Region 5 Staff (Jennifer Crooks and Tom Poy)

## **9. Meet with Mott Foundation to discuss Lead Service Line Identification Study**

## **10. Lead Education Program**

- DHHS is the lead on Lead Education Program



**11. Moving KWA forward**

- Proactive meetings with KWA

**12. Participate actively with Technical Advisory Council**

**13. Utilize Joan Rose and MSU water expertise**

**14. Public Outreach**

- Mayor Karen Weaver
- Genesee County Health Department
- Drs. Lawrence Reynolds, Eden Wells and Matthew Davis
- Ministers
- Land Bank
- Legislators
- Citizens

**15. Outreach to schools**

- EPA guidance on testing
- Work with state superintendent
- ODWMA Staff to work on Literature

**16. Make recommendations to EPA about LCR**

**17. Compliance Communication letter sent November 9, 2015**

- Wait until after Dec 30<sup>th</sup>

**18. Enhance Coordination with Health Officials regarding personal health notifications of drinking water issues.**

## **Thelen, Mary Beth (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, November 15, 2015 3:46 PM  
**To:** Ayers, Angela (GOV)  
**Cc:** Brown, Eric (GOV); Thelen, Mary Beth (DEQ)  
**Subject:** FW: Rep. Kildee Update Letter and Health Fund Request  
**Attachments:** 111315 Update and Health Fund Request (Snyder).pdf; 10-6-2015 Response - Kildee.pdf

Angela, FYI only at this time.

Director spoke with Eric Brown on Friday, and Eric will handle this letter.

Thanks.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

---

**From:** Dickinson, Jordan [<mailto:Jordan.Dickinson@mail.house.gov>]  
**Sent:** Friday, November 13, 2015 11:45 AM  
**To:** Brown, Eric (GOV)  
**Cc:** Wyant, Dan (DEQ); Pallone, Maggie (DEQ); [snyder@michigan.gov](mailto:snyder@michigan.gov); [tcook@house.mi.gov](mailto:tcook@house.mi.gov); [RDeVries@senate.michigan.gov](mailto:RDeVries@senate.michigan.gov); [bswartztle@house.mi.gov](mailto:bswartztle@house.mi.gov); Andrew Leavitt ([ALEavitt@senate.michigan.gov](mailto:ALEavitt@senate.michigan.gov))  
**Subject:** Rep. Kildee Update Letter and Health Fund Request

Hi Eric,

Please see the attached letter for Governor Snyder. Could you please make sure that he sees it? Just so you know, we are not doing a press release on it. Let me know if you have any further questions.

Thanks,

**Jordan Dickinson**  
Legislative Assistant  
Congressman Dan Kildee (MI-05)  
227 Cannon House Office Building  
Washington, D.C. 20515  
Phone: (202) 225-3611  
[www.dankildee.house.gov](http://www.dankildee.house.gov)



[Sign up for Congressman Dan Kildee's e-newsletter](#)

11/15/15

Dan,

RE: The Kildee letter that came in on Friday.  
Maggie has sent it internally DEQ to who all needs  
it, (Sygo, Liane, Madhu, Brad, etc).

Qs:

Do you want me to reach out to Gov's staff on if they  
want us to do a response?

Is it appropriate for us to do the response?

Who's signature? Governor? You?

Or do you want us to wait until the Governor's office  
gives us direction on this letter?

Do you want Angela Ayers to receive a copy? It  
doesn't appear Eric got it (incorrect email) so I'll  
forward to him today as well.

GRIC will  
take the lead  
and  
give  
us  
Direction  
D

I talked  
to Eric

Brown

> Gov.

Yes

Wait

Yes

Thx mbt

## Thelen, Mary Beth (DEQ)

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**Sent:** Saturday, November 14, 2015 6:23 PM  
**To:** Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); Krisztian, George (DEQ)  
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FYI

Sent from my iPad

Begin forwarded message:

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**Date:** November 13, 2015 at 11:45:03 AM EST  
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[www.dankildee.house.gov](http://www.dankildee.house.gov)

DANIEL T. KILDEE  
5TH DISTRICT, MICHIGAN

COMMITTEE ON  
FINANCIAL SERVICES

SUBCOMMITTEE ON  
HOUSING AND INSURANCE

SUBCOMMITTEE ON  
MONETARY POLICY AND TRADE

SENIOR WHIP

DEMOCRATIC POLICY AND  
COMMUNICATIONS COMMITTEE



**Congress of the United States**  
**House of Representatives**  
**Washington, DC 20515**

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(202) 225-6393 (FAX)

DISTRICT OFFICE:

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FLINT, MI 48502  
(810) 238-8627  
(810) 238-8658 (FAX)

WWW.DANKILDEE.HOUSE.GOV

/REPDKILDEE

@REPDKILDEE

November 13, 2015

Governor Rick Snyder  
Executive Office of the Governor  
P.O. Box 30013  
Lansing, Michigan 48909

Governor Snyder:

I would like to provide you an update with some of the work we are doing in response to your letter on October 2, 2015 letter. I also have three requests of the state that are necessary to provide relief to the victims of the Flint water crisis.

First, Senator Stabenow, Senator Peters and I wrote a letter to the U.S. Environmental Protection Agency (EPA) asking for clarification on whether federal law permits states to use Safe Drinking Water State Revolving Funds (Revolving Funds) to finance the replacement of privately owned lead water service lines (attached). The EPA responded that the Revolving Funds can in fact be used for this purpose. My office immediately notified both your office and the Michigan Department of Environmental Quality of this fact.

Secondly, the three of us also wrote to Secretary Tom Vilsack requesting that the U.S. Department of Agriculture (USDA) provide greater clarification on the availability of "Ready to Feed" formula for recipients of Special Supplemental Nutrition Program for Women, Infants and Children (WIC) in Flint. Additionally, the letter asks to identify resources to improve the nutrition of Flint residents specifically as it relates to lead, because a certain diet can reduce some of the impact of exposure. The USDA is currently reviewing the letter.

Third, I have been working with the EPA on important revisions to the Lead and Copper Rule that would prevent a public health crisis like the one in Flint from happening again in other communities. I will be providing testimony at a meeting of the National Drinking Water Advisory Council next Wednesday, November 18 on what we have learned firsthand in Flint and the necessary improvements to the Lead and Copper Rule.

I will continue to pursue all of these avenues in order to find assistance for the people of Flint. There are, however, additional steps that need to be taken to remediate the damage done to the people of Flint due to the failures at the state government level, alongside the forgiveness of Flint's Revolving Funds loan debt if that becomes available. I urge state and local partners to work in coordination to fulfill the following requests.

- First, I request that the state of Michigan use its Revolving Funds and other state resources such as the rainy day and general funds to repair the damage done to Flint's water distribution system.

Due to the corrosive nature of the water, conservative estimates show there has been hundreds of millions of dollars of damage done to Flint's water distribution system. The damage to the system will increase maintenance costs resulting in higher rates for Flint water users, who already are burdened by the highest water rates in the state. Furthermore, the presence of over 15,000 lead service lines continues to threaten the quality of the water and creates the potential for future lead exposure through drinking water. As stated previously, the EPA has said that using the Revolving Funds for this purpose is allowed under federal law, and I request the state do so.

- Second, I request the state create a fund for ongoing assistance to the people of Flint to respond to the impacts of lead exposure.

The effects of lead are serious and permanent, with especially harmful impacts on young children and those with weakened immune systems. In discussions with health professionals, they have expressed the need for significant investments in the local health system in order to respond to the widespread exposure of lead to the people of Flint, including monitoring of future lead exposure. This fund should include support for, at a minimum, continuous health monitoring, early education programs, nutrition education, support services for children to succeed in school, and continued exposure prevention efforts. The investments we make now to combat the negative impacts of lead exposure will pay dividends in avoided costs in the future.

- Finally, I again ask that the state immediately reverse course and rescind Flint's obligation to provide \$2 million for the cost of connecting to the Detroit water system and refund any money the city of Flint has had to pay.

Requiring a financially distressed city and its people to pay for the state's failures is an abdication of clear responsibility by the state. The state-appointed emergency manager was in charge of the city of Flint during the time that the decision to leave the Detroit system was made. The state – not Flint – created this water crisis, and the state needs to pay to fix it. The \$2 million Flint spent to reconnect to the Detroit water system could be used for many other essential services in Flint, such as hiring policemen and firefighters, improving schools and maintaining parks.

In addition to state investments, I encourage the state to request assistance from federal agencies. They have extensive experience working with health, education and nutrition systems nationwide and could provide critical resources to state officials. Specifically, the Centers for Disease Control and Prevention has offered resources if the state requests it. I will work to support any efforts for federal assistance the state makes.

I look forward to working with the state and federal governments to not only provide clean drinking water to the people of Flint immediately, but also repair the damage done to the city's water system and give local health professionals the resources they need to combat the long term impacts of lead exposure.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Kildee", with a stylized, flowing script.

Dan Kildee  
MEMBER OF CONGRESS

Cc:

Senate Republican Leader Arlen Meekhof  
Senate Democratic Leader Jim Ananich  
Speaker of the House Kevin Cotter  
House Democratic Leader Tim Greimel



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF WATER

OCT 28 2015

The Honorable Dan Kildee  
House of Representatives  
Washington, D.C. 20515

Dear Congressman Kildee:

Thank you for your October 6, 2015, letter asking whether federal law permits a state to use the Drinking Water State Revolving Fund to finance the replacement of privately owned lead water service lines.

Drinking Water State Revolving Fund loans can be used to finance lead service line replacement on public and private property, provided the loans are made to an eligible entity in accordance with the Safe Drinking Water Act to protect public health, and all other Drinking Water State Revolving Fund requirements are met. The eligible entity in this case is the Flint community water system. The U.S. Environmental Protection Agency is actively discussing the option of using the Drinking Water State Revolving Fund for lead service line replacement with the Michigan Department of Environmental Quality and the City of Flint.

Again, thank you for your letter. If you have further questions, please contact me or your staff may contact Cathy Davis in the EPA's Office of Congressional and Intergovernmental Relations at Davis.CatherineM@epa.gov or (202) 564-2703.

Sincerely,

A handwritten signature in black ink, reading "Kenneth J. Kopocis".

Kenneth J. Kopocis  
Deputy Assistant Administrator



## Thelen, Mary Beth (DEQ)

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Congressman Dan Kildee (MI-05)  
227 Cannon House Office Building  
Washington, D.C. 20515  
Phone: (202) 225-3611  
[www.dankildee.house.gov](http://www.dankildee.house.gov)

orig: 3-1 Leg. US File  
cc: 2-2 EPA File  
cc: 2-1 Gov  
cc: mbt

DANIEL T. KILDEE  
5TH DISTRICT, MICHIGAN

COMMITTEE ON  
FINANCIAL SERVICES

SUBCOMMITTEE ON  
HOUSING AND INSURANCE

SUBCOMMITTEE ON  
MONETARY POLICY AND TRADE

SENIOR WHIP

DEMOCRATIC POLICY AND  
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Congress of the United States  
House of Representatives  
Washington, DC 20515

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WWW.DANKILDEE.HOUSE.GOV

REP DANKILDEE

@REP DANKILDEE

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Dan Kildee  
MEMBER OF CONGRESS

Cc:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF WATER

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Sincerely,

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Kenneth J. Kopocis  
Deputy Assistant Administrator

# Letter Buckslip

18-Nov-15

ID:	DIR00196	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ <input type="checkbox"/> Delegated
Date of letter:	11/16/2015	
Date received:	11/18/2015	
Date due:	11/18/2015	
Reply date:	11/18/2015	
Last name:	Chaudhary	
First name:	Dimple	
Organization:	Natural Resources Defense Council	
Subject:	Notice of Intent to Sue under Safe Drinking Water Act	
Reply to:		
Author:	No response needed	
Owner:	SHALERK	

<u>Action</u>	<u>Action Date</u>	<u>Due Date</u>	<u>Entity</u>	<u>Signature</u>	<u>Owner</u>	<u>CCs</u>
Assigned 1	11/18/2015	11/18/2015	EXE	HAA	SHALERK	Thelen Sygo/Shaler Anderson/Copen Pallone/Feuerstein Wurfel Shekter Smith Devereaux Krisztian Manning/Hart Richard Kuhl

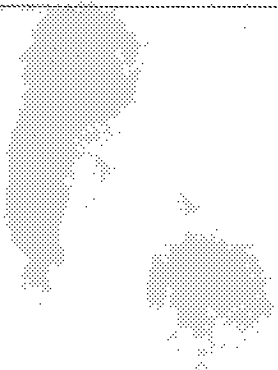
**Comments:** Assigned to EXE/ Sygo

Note: Enclosed with letter was a CD containing PDFs of letter, 64 Exhibits, & an Index of Exhibits. However, Exhibits 31 and 61 are unreadable. Rest of CD was copied to: U:\Transfer\NRDC-ACLU Notice of Intent to Sue-Exhibits.

File Executive	11/18/2015	EXE	SHALERK
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**Comments:** Original of letter only to 4-1 Misc. File

CD will be given to Richard Kuhl, ENRA Division, DAG



DIR00196

November 16, 2015

**By Certified Mail, Return Receipt Requested**

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City Administrator Natasha Henderson  
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**Re: Notice of Intent to Sue Under the Safe Drinking Water Act, 42 U.S.C.  
§ 300j-8(b)(1)(a), for Failure to Control Lead in Drinking Water in Flint,  
Michigan, and Failure to Assist Michigan Schools with Lead Testing and  
Remediation**

We write on behalf of Concerned Pastors for Social Action, Melissa Mays, the  
American Civil Liberties Union of Michigan (ACLU of Michigan), and the Natural





Emergency Manager has "broad powers" to "rectify the financial emergency and to assure fiscal accountability of the local government."<sup>4</sup>

While under control of the Emergency Manager, the City faced decisions about the future of its drinking-water supply. For fifty years, the City had purchased drinking water from the Detroit Water and Sewerage Department (Detroit), which sources water from Lake Huron.<sup>5</sup> In response to rising water rates charged by Detroit, in March 2013, the City Council voted to join the Karegnondi Water Authority (KWA), a newly formed municipal water supply system. The KWA was planning to build a pipeline to distribute water directly from Lake Huron to mid-Michigan communities, including Genesee County, where Flint is located.<sup>6</sup> The City Council's vote did not become effective until several weeks later, after both the Emergency Manager and State Treasurer approved the decision.<sup>7</sup>

The City's contract with Detroit was set to expire in April 2014, at least eighteen months before the KWA pipeline was scheduled to be completed.<sup>8</sup> Faced with a year-and-a-half gap in the City's water supply, the Emergency Manager declined to negotiate a short-term contract with Detroit and decided instead to use the Flint River as a primary drinking-water source.<sup>9</sup> The City had previously explored—and rejected—the Flint River as a primary drinking-water source. This is because the Flint Water Treatment Plant would have required fifty million dollars in upgrades to treat the river water and "produce finished water in conformance with the current federal and state drinking water regulations."<sup>10</sup>

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<sup>4</sup> *Id.*

<sup>5</sup> See Dominic Adams, *Closing the valve on history: Flint cuts water flow from Detroit after nearly 50 years*, Michigan Live, Apr. 25, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/04/closing\\_the\\_valve\\_on\\_history\\_f.html](http://www.mlive.com/news/flint/index.ssf/2014/04/closing_the_valve_on_history_f.html) (attached as Ex. 3).

<sup>6</sup> Steve Carmody, *Flint opting to get its future tap water from Lake Huron*, Michigan Radio, Mar. 25, 2013, <http://michiganradio.org/post/flint-opting-get-its-future-tap-water-lake-huron#stream/> (attached as Ex. 4); Karegnondi Water Authority, About, <http://www.karegnondi.com/#!about/c20r9> (last visited Nov. 13, 2015) (attached as Ex. 5).

<sup>7</sup> See Mich. Comp. Laws § 141.1552(1)(g), (3); Emergency Manager, Resolution to Purchase Capacity from Karegnondi Water Authority (adopted Mar. 29, 2013) (attached as Ex. 6); Letter from Andy Dillon, State Treasurer, to Edward Kurtz, Emergency Manager (Apr. 11, 2013) (authorizing Emergency Manager to enter into contract with KWA) (attached as Ex. 7).

<sup>8</sup> Sarah Schuch, *KWA pipeline work continues as Flint water lead concerns rise*, Michigan Live, Sept. 25, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/kwa\\_pipeline\\_projected\\_to\\_be\\_c.html](http://www.mlive.com/news/flint/index.ssf/2015/09/kwa_pipeline_projected_to_be_c.html) (attached as Ex. 8); see Ron Fonger, *Detroit gives notice: It's terminating water contract covering Flint, Genesee County in one year*, Michigan Live, Apr. 19, 2013, [http://www.mlive.com/news/flint/index.ssf/2013/04/detroit\\_gives\\_notice\\_its\\_termi.html](http://www.mlive.com/news/flint/index.ssf/2013/04/detroit_gives_notice_its_termi.html) (attached as Ex. 9).

<sup>9</sup> Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Dep't (Mar. 7, 2014) (explaining that the City "has actively pursued using the Flint River as a temporary water source" instead of accepting Detroit's offer to provide water to the City) (attached as Ex. 10).

<sup>10</sup> Cost of Service Study (2011), Appendix 8 to Analysis of the Flint River as a Permanent Water Supply for the City of Flint, <http://www.scribd.com/doc/64382181/Analysis-of-the-Flint-River-as-a-Permanent-Water-Supply-for-the-City-of-Flint-July-2011-Appendices-1-to-8> (attached as Ex. 11);

Under the Safe Drinking Water Act's Lead and Copper Rule, Flint's water system could not use the Flint River as a water source without first obtaining approval from the Michigan Department of Environmental Quality (MDEQ). The Lead and Copper Rule required MDEQ to approve both the City's proposed addition of a new water source (the Flint River) and the long-term change in water treatment (from treatment through Detroit's water plant to treatment at the Flint Water Treatment Plant).<sup>11</sup> In April 2014, MDEQ approved the switch to river water.<sup>12</sup> The City immediately began pumping Flint River water through the City's distribution pipes and into residents' taps.

#### **B. Dangerous lead contamination results from the City's switch to river water**

In the twenty months following the switch in water sources, residents' drinking water has been at times cloudy, discolored, and foul-smelling.<sup>13</sup> Residents reported that they have experienced hair loss, skin rashes, and vomiting after drinking the water.<sup>14</sup> In the summer of 2014, the City was forced to issue several boil-water notices after tap water tested positive for total coliform bacteria.<sup>15</sup> The City's subsequent treatment of the water to kill disease-carrying pathogens resulted in elevated levels of total trihalomethanes, a disinfection byproduct that can cause serious health problems, including an increased risk of cancer.<sup>16</sup>

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see also Kristin Longley, *Water pipeline v. Flint River: City of Flint studying its drinking water options*, Michigan Live, Jan. 22, 2011, [http://www.mlive.com/news/flint/index.ssf/2011/01/water\\_pipeline\\_vs\\_flint\\_river.html](http://www.mlive.com/news/flint/index.ssf/2011/01/water_pipeline_vs_flint_river.html) (attached as Ex. 12); Dominic Adams, *Flint River now an option for drinking water following Detroit's termination of contract*, Michigan Live, July 23, 2013, [http://www.mlive.com/news/flint/index.ssf/2013/07/city\\_readying\\_water\\_plant\\_to\\_t.html](http://www.mlive.com/news/flint/index.ssf/2013/07/city_readying_water_plant_to_t.html) (quoting city officials' explanation for rejecting use of Flint River: "upgrades to Flint's water plant would be too expensive, the river didn't provide enough capacity to serve Flint residents' water needs and the Michigan Department of Environmental Quality would not allow it") (attached as Ex. 13).

<sup>11</sup> 40 C.F.R. § 141.90(a)(3); see also *id.* § 141.81(a)-(b).

<sup>12</sup> See Adams, *Closing the valve on history*, *supra* note 5 (Ex. 3).

<sup>13</sup> See Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation, July 16, 2015, <http://www.thenation.com/article/in-flint-michigan-overpriced-water-is-causing-peoples-skin-to-erupt-and-hair-to-fall-out/> (attached as Ex. 14); Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post, July 10, 2015, [http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues\\_b-7765132.html](http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues_b-7765132.html) (attached as Ex. 15).

<sup>14</sup> Laura Gottesdiener, *Flint, Mich., residents find state water control hard to swallow*, Al Jazeera America, Apr. 3, 2015, <http://america.aljazeera.com/articles/2015/4/3/flint-residents-find-state-water-control-hard-to-swallow.html> (attached as Ex. 16).

<sup>15</sup> Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live, Sept. 5, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/09/flint\\_issues\\_boil\\_water\\_adviso.html](http://www.mlive.com/news/flint/index.ssf/2014/09/flint_issues_boil_water_adviso.html) (attached as Ex. 17).

<sup>16</sup> Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press, Jan. 23, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/22/water-woes-latest-hit-flint/22193291/> (attached as Ex. 18); Mich. Dep't of Env'tl. Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014) (attached as Ex. 19); U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinform>

Because Flint River water is also highly corrosive, dangerous amounts of lead began to leach out of pipes and into the City's drinking water.<sup>17</sup> Lead in drinking water occurs primarily from corrosion of pipes and other plumbing materials that contain lead or lead solder.<sup>18</sup> The Lead and Copper Rule requires water systems to manage lead levels by controlling corrosion, which is often accomplished by adding corrosion-inhibiting chemicals.<sup>19</sup> Water systems must implement and maintain an "optimal" corrosion-control treatment program that "minimizes the lead . . . concentrations at users' taps."<sup>20</sup>

Flint did not consider how to control the corrosivity of the river water before switching water sources, nor did MDEQ require the City to implement any corrosion-control measures. Rather, beginning in April 2014, the City did not use any form of treatment to control corrosion.<sup>21</sup> The City waited until after its residents were drinking the river water to assess whether it posed a risk of increased lead exposure. MDEQ endorsed this approach. In June 2014, Flint's water system initiated the first of two six-month monitoring periods to test tap water for lead under the Lead and Copper Rule; the second six-month period ran from January to June 2015.<sup>22</sup> During these monitoring periods, the water system used flawed testing methods that appear to have been designed to underreport the lead content of residents' drinking water.<sup>23</sup>

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[ation/disinfectionbyproducts.cfm](#) (last updated Dec. 13, 2013) (attached as Ex. 20); *see also* 40 C.F.R. § 141.64(b).

<sup>17</sup> Marc Edwards, *Test Update: Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015), <http://flintwaterstudy.org/2015/09/test-update-flint-river-water-19x-more-corrosive-than-detroit-water-for-lead-solder-now-what/> (attached as Ex. 21); Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015), <http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/> (attached as Ex. 22). The river water is so corrosive that in October 2014, a local GM engine plant decided to switch back to Lake Huron water to avoid damage to equipment at the plant from corrosion. Brianna Owczarzak, *GM says no to Flint water*, WNEM, Oct. 14, 2014, <http://www.wnem.com/story/26785625/gm-says-no-to-flint-water> (attached as Ex. 23).

<sup>18</sup> *See* Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 56 Fed. Reg. 26,460, 26,464 (June 7, 1991).

<sup>19</sup> *See* 40 C.F.R. § 141.82.

<sup>20</sup> *Id.* §§ 141.2; 141.80(d).

<sup>21</sup> *See* Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015) (attached as Ex. 24).

<sup>22</sup> *See* 40 C.F.R. § 141.86; Email from Pat Cook, *supra* note 21 (Ex. 24).

<sup>23</sup> *See infra* pp. 11-13.

Flint's monitoring data showed that some residents' water contained lead at concentrations above the federal "action level" of 15 parts per billion (ppb).<sup>24</sup> These high lead levels put residents at risk of a broad array of serious, irreversible health effects, including cognitive impairment, kidney damage, and increased blood pressure.<sup>25</sup> When the Environmental Protection Agency (EPA) learned of these high lead sampling results in February 2015, it notified MDEQ officials that the sampling results raised significant concerns about corrosion from lead pipes in Flint's distribution system.<sup>26</sup> Nonetheless, throughout the monitoring periods, the City and MDEQ maintained that these high lead levels were isolated and that the data, taken together, demonstrated Flint's compliance with the Lead and Copper Rule.<sup>27</sup>

### **C. Community advocacy and independent testing prompt long past due response from City and State officials**

As the City concluded its second six-month round of sampling in July 2015, and notified some Flint residents of elevated lead levels in their tap water, the community became increasingly concerned. A small coalition of local groups, including Water You Fighting For and Concerned Pastors for Social Action, began working with researchers at Virginia Tech to conduct their own lead sampling of Flint's water. The Virginia Tech scientists found that ten percent of the more than 250 samples collected from Flint residences had lead levels of 25 ppb or more, well above the federal action level for lead.<sup>28</sup> Several samples exceeded 100 ppb, and one sample exceeded 1000 ppb.<sup>29</sup> Though aware of

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<sup>24</sup> See Mich. Dep't of Env'tl. Quality, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Aug. 20, 2015) (showing six samples with lead levels over the action level) (attached as Ex. 25); 40 C.F.R. § 141.80(c)(1).

<sup>25</sup> See, e.g., U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013) (attached as Ex. 26); U.S. EPA, Basic Information About Lead in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm> (last updated June 26, 2015) (explaining that "[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development," and that "[a]dults who drink this water over many years could develop kidney problems or high blood pressure") (attached as Ex. 27); see also National Ambient Air Quality Standards for Lead, 80 Fed. Reg. 278, 290 (Jan. 5, 2015).

<sup>26</sup> See, e.g., Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015) (attached as Ex. 28).

<sup>27</sup> See Nancy Kaffer, *MDEQ e-mails show stunning indifference to Flint peril*, Detroit Free Press, Oct. 22, 2015, <http://www.freep.com/story/opinion/columnists/nancy-kaffer/2015/10/21/indifference-characterized-state-approach-flint-water/74289430/> (attached as Ex. 29).

<sup>28</sup> *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study, Sept. 16, 2015, <http://flintwaterstudy.org/2015/09/distribution-of-lead-results-across-flint-by-ward-and-zip-codes/> (attached as Ex. 30); Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live, Sept. 15, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/virginia\\_tech\\_researcher\\_says.html](http://www.mlive.com/news/flint/index.ssf/2015/09/virginia_tech_researcher_says.html) (attached as Ex. 31).

<sup>29</sup> Marc Edwards et al., *Lead testing results for water sampled by residents*, Flint Water Study, Sept. 28, 2015, <http://flintwaterstudy.org/information-for-flint-residents/results-for-citizen-testing-for-lead-300-kits/> (attached as Ex. 32).

the Virginia Tech sampling results, MDEQ officials continued to insist that Flint's water was safe to drink.<sup>30</sup>

In September 2015, a medical study conducted by a local pediatrician confirmed the kinds of adverse health impacts that residents had voiced concern about for months: the rate of Flint children with elevated blood lead levels had nearly doubled since the City changed its drinking-water source.<sup>31</sup> State officials and the Governor reacted by "downplay[ing] and in some cases attempt[ing] to discredit" the pediatrician's findings, and dismissing citizen concerns as "near-hysteri[cal]."<sup>32</sup>

Subsequent testing by MDEQ revealed that at least four schools in Flint had lead levels in their drinking water above the federal action level.<sup>33</sup> At Freeman Elementary School, water tested had lead levels over 100 ppb, more than six times the federal action level.<sup>34</sup> This increase in lead exposure is particularly dangerous in Flint, a community where residents are already at higher risk of elevated blood lead levels and lead poisoning. Michigan ranks fifth worst in the country for harmful exposures to lead.<sup>35</sup> Low income is a risk factor for lead poisoning, and more than a third of families in Flint live below the poverty level, three times the national average.<sup>36</sup> Children in Flint also face high risk of lead

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<sup>30</sup> Ron Fonger, *Feds sending in experts to help Flint keep lead out of water*, Michigan Live, Sept. 10, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/university\\_researchers\\_dont\\_dr.html](http://www.mlive.com/news/flint/index.ssf/2015/09/university_researchers_dont_dr.html) (attached as Ex. 33).

<sup>31</sup> *Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community* (PowerPoint Presentation) (presented on Sept. 24, 2015), available at <http://flintwaterstudy.org/2015/09/pediatric-lead-exposure-presentation-from-hurley-medical-center-doctors-concerning-flint-mi/> (attached as Ex. 34).

<sup>32</sup> *Study suggests Flint's water causing increased lead poisoning*, Michigan Radio, Sept. 28, 2015, <http://michiganradio.org/post/study-suggests-flints-water-causing-increased-lead-poisoning#stream/0> (attached as Ex. 35); Ron Fonger, *State says data shows no link to Flint River, elevated lead in blood*, Michigan Live, Sept. 24, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/state\\_says\\_its\\_data\\_shows\\_no\\_c.html](http://www.mlive.com/news/flint/index.ssf/2015/09/state_says_its_data_shows_no_c.html) (attached as Ex. 36); *Did this Michigan Town Poison its Children?*, U.S. News & World Report, Sept. 24, 2015, <http://www.usnews.com/news/articles/2015/09/25/flint-michigan-children-show-high-levels-of-lead-in-blood> (attached as Ex. 37).

<sup>33</sup> Steve Carmody, *Four Flint schools have high lead levels in their water*, Michigan Radio, Oct. 8, 2015, <http://michiganradio.org/post/four-flint-schools-have-high-lead-levels-their-water> (attached as Ex. 38).

<sup>34</sup> *Id.*

<sup>35</sup> Ctrs. for Disease Control & Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013), [http://www.cdc.gov/nceh/information/healthy\\_homes\\_lead.htm](http://www.cdc.gov/nceh/information/healthy_homes_lead.htm) (attached as Ex. 39).

<sup>36</sup> 2009-2013 American Community Survey 5-Year Estimates, 2013, available at <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml> (enter "Flint, MI" in the box under "Community Facts," click on "Income" on left-side bar, then click "Selected Economic Characteristics" under "2013 American Community Survey") (table attached as Ex. 40 compares data from Flint, Michigan, to Michigan and the United States).

exposure from lead-paint dust, as nearly ninety percent of Flint's housing stock was built before 1978 (when the federal ban on high-lead paint went into effect).<sup>37</sup>

Finally, in late September 2015, the City abandoned its assertions that Flint's drinking water was safe. Nearly seven months after the City first saw dangerously high levels of lead in some residents' water, Flint issued a drinking-water advisory and called for state financial assistance to switch the water system back to Detroit's supply.<sup>38</sup> Two weeks later, Governor Snyder requested six million dollars from the state legislature to reconnect the Flint water system to Detroit.<sup>39</sup> With additional funding from the City and a private foundation, the switch was completed in mid-October.<sup>40</sup>

Following the switch back to Detroit water, some government officials began to ask questions about what went wrong in the course of Flint's change in water sources.<sup>41</sup> Governor Snyder created a task force to review water management and testing in Flint,<sup>42</sup> and EPA established its own task force "to provide the Agency's technical expertise through regular conversations" with the City and MDEQ.<sup>43</sup> Governor Snyder has also announced

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<sup>37</sup> 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 30, 2013), [https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels\\_419508\\_7.pdf](https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels_419508_7.pdf) (attached as Ex. 41); Am. Cancer Soc'y, *Lead, Lead in the Environment*, <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/lead> (last updated May 27, 2014) (explaining that lead paint is a "major" source of exposure) (attached as Ex. 42); Maj. Thomas F. Zimmerman, *The Regulation of Lead-Based Paint in Air Force Housing*, 44 A.F. L. Rev. 169, 174-75 (1998).

<sup>38</sup> *City of Flint Issues Lead Advisory*, City of Flint, Sept. 25, 2015, <https://www.cityofflint.com/2015/09/25/city-of-flint-issues-lead-advisory/> (attached as Ex. 43); Steve Carmody, *Flint officials exploring return to Detroit water*, Michigan Radio, Sept. 28, 2015, <http://michiganradio.org/post/flint-officials-exploring-return-detroit-water#stream/0> (attached as Ex. 44).

<sup>39</sup> John Wisely, *Snyder announces \$12 million plan to fix Flint water*, Detroit Free Press, Oct. 8, 2015, <http://www.freep.com/story/news/local/michigan/2015/10/08/snyder-flint-water-reconnect/73567778/> (attached as Ex. 45).

<sup>40</sup> Amanda Emery, *Flint reconnects to Detroit water, may take 3 weeks to clear all pipes*, Michigan Live, Oct. 16, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/10/flint\\_reconnecting\\_to\\_detroit.html](http://www.mlive.com/news/flint/index.ssf/2015/10/flint_reconnecting_to_detroit.html) (attached as Ex. 46).

<sup>41</sup> E.g., Letter from Sen. Jim Ananich, Mich. Senate Minority Leader, to Susan Hedman, U.S. EPA, and Gina McCarthy, U.S. EPA (Oct. 21, 2015) (attached as Ex. 47); Letter from Rep. Daniel Kildee, U.S. Congressman, to Gina McCarthy, U.S. EPA (Oct. 21, 2015) (attached as Ex. 48).

<sup>42</sup> Press Release, Gov. Rick Snyder, *Gov. Rick Snyder announces Flint Water Task Force to review state, federal and municipal actions, offer recommendations* (Oct. 21, 2015), [http://www.michigan.gov/snyder/0,4668,7-277-57577\\_57657-367761--00.html](http://www.michigan.gov/snyder/0,4668,7-277-57577_57657-367761--00.html) (attached as Ex. 49).

<sup>43</sup> Press Release, U.S. EPA, *EPA Establishes Safe Drinking Water Task Force to Provide Technical Expertise to MDEQ and City of Flint* (Oct. 16, 2015), <http://yosemite.epa.gov/opa/admpress.nsf/0/A92DE629DB86E66685257EE000579593> (attached as Ex. 50).

plans to launch an “education campaign soon to help schools statewide learn how to get their water tested” for lead.<sup>44</sup>

Despite this proliferation of task forces and campaigns, neither the City nor MDEQ has announced changes in the City’s lead monitoring practices in the wake of Flint’s public-health crisis. Rather, Flint and MDEQ have maintained that these practices are accurate and adequate, despite the near certainty that they are underrepresenting lead contamination in many of Flint’s high-risk homes.

## **II. City and State officials are in violation of the Safe Drinking Water Act’s Lead and Copper Rule**

The Safe Drinking Water Act (the Act) authorizes citizens to sue any governmental entity “who is alleged to be in violation of any requirement” under the statute.<sup>45</sup> These requirements include the national primary drinking-water regulations for lead and copper set forth in the Lead and Copper Rule.<sup>46</sup> The Lead and Copper Rule obligates water systems to monitor and control for lead in drinking water.<sup>47</sup>

Since April 2014, Flint’s water system has failed to comply with the Lead and Copper Rule’s requirements for monitoring water for lead, notifying the public of tap-water monitoring results, reporting monitoring results to MDEQ, and controlling corrosion from lead pipes.<sup>48</sup> These violations systematically result in the City’s underestimating lead levels in its drinking water, masking a public-health crisis. The violations are ongoing and likely to recur in the future: Flint’s water system presently is obligated to monitor for lead every six months, and there is no indication that Flint has changed or disavowed its inadequate approach to monitoring.<sup>49</sup>

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<sup>44</sup> See Lori Higgins, *Michigan to launch lead education effort statewide*, Detroit Free Press, Oct. 13, 2015, <http://www.freep.com/story/news/local/michigan/2015/10/13/lead-water-flint-michigan-testing/73871480/> (attached as Ex. 51).

<sup>45</sup> 42 U.S.C. § 300j-8(a)(1).

<sup>46</sup> See *id.* § 300g-1(b)(1)(A); 40 C.F.R. § 141.80(a)(1).

<sup>47</sup> See, e.g., 40 C.F.R. § 141.86.

<sup>48</sup> Flint’s water system is subject to the requirements of the Lead and Copper Rule because it is a “community water system” not otherwise exempted from the regulations. 40 C.F.R. §§ 141.80(a)(1), 141.2.

<sup>49</sup> See *Tamaska v. City of Bluff City*, 26 F. App’x 482, 485 (6th Cir. 2002) (citing *Chesapeake Bay Found. v. Gwaltney of Smithfield*, 844 F.2d 170, 171–72 (4th Cir.1988)). A water system is required to monitor tap water for lead every six months if it (1) exceeds the action level for any monitoring period, or (2) “fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State ... for more than 9 days in any six-month period.” 40 C.F.R. § 141.86(d)(4)(vi)(B). Flint’s water system failed to maintain applicable values of orthophosphate and/or pH designated as the optimal water quality parameters by MDEQ. In addition, had the water system conducted monitoring in compliance with the Lead and Copper Rule during the January to June 2015 period, it likely would have exceeded the lead action level.

Under the Act, a “supplier of water” is “any person who owns or operates a public water system.”<sup>50</sup> The City of Flint owns Flint’s water system.<sup>51</sup> Upon information and belief, the State officials administering Flint’s receivership and the City presently operate Flint’s water system. As discussed above, Flint’s Emergency Manager exercised the authority of the local government in the place of Flint’s mayor and city council. The Emergency Manager managed the water system and conducted its affairs, including making the decision to use the Flint River as a primary drinking-water source.<sup>52</sup> In April 2015, Governor Snyder removed the Emergency Manager and appointed a Receivership Transition Advisory Board to oversee the City’s affairs until the receivership is terminated.<sup>53</sup> The Board has control over the City’s budget, and must approve all decisions adopted by the City Council.<sup>54</sup> The Michigan Local Financial Stability and Choice Act requires the State Treasurer to sit on a receivership transition advisory board for any municipality for which the governor appoints such a board, and Governor Snyder has appointed the State Treasurer (or his designee) to chair Flint’s Board.<sup>55</sup> The City Administrator reports to the Board, manages the City’s daily administrative operations, and directs City department heads in carrying out the daily activities of the City.<sup>56</sup> To date, the City remains in receivership, and its actions remain subject to approval of the Board.<sup>57</sup>

Accordingly, the City of Flint; Governor Snyder; Dan Wyant, Director of MDEQ; Nick A. Khouri, Treasurer of Michigan; Frederick Headen, Chairperson of the Flint Receivership Transition Advisory Board; Brian Larkin, David McGhee, Robert McMahan,

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<sup>50</sup> 42 U.S.C. § 300f(5).

<sup>51</sup> See City of Flint, Water System Update, Sept. 2015, <https://www.cityofflint.com/wp-content/uploads/City-Council-Water-Presentation-9-14-2015.pdf> (attached as Ex. 52).

<sup>52</sup> See *United States v. Twp. of Brighton*, 153 F.3d 307, 314 (6th Cir. 1998) (defining “operator” for purposes of CERCLA as an entity that “performed some affirmative acts,” such as “directing the workings, managing, or conducting the affairs” of a facility) (internal quotation marks and alterations omitted); cf. *United States v. Alisal Water Corp.*, 114 F. Supp. 2d 927, 938 (N.D. Cal. 2000) (applying case law discussing CERCLA “operator” liability to the Safe Drinking Water Act context).

<sup>53</sup> Mich. Comp. Laws § 141.1563(1); Press Release, Gov. Rick Snyder, *Gov. Rick Snyder: City of Flint ready to move forward as financial emergency resolved*, Apr. 29, 2015, [http://www.michigan.gov/snyder/0,4668,7-277-57577\\_57657-353433--00.html](http://www.michigan.gov/snyder/0,4668,7-277-57577_57657-353433--00.html) (attached as Ex. 53); Emergency Manager Order 20 ¶¶ 4.a.6, 4.a.7 (adopted Apr. 25, 2015), <https://www.cityofflint.com/wp-content/uploads/Order-No.-20.pdf> (attached as Ex. 54).

<sup>54</sup> Emergency Manager Order 20 ¶¶ 4.a.6, 4.a.7, *supra* note 53 (Ex. 54).

<sup>55</sup> See Mich. Comp. Laws § 141.1563(2); Letter from Gov. Rick Snyder to Hon. Ruth Johnson, Mich. Sec’y of State (Apr. 29, 2015), [http://michigan.gov/documents/treasury/Flint\\_RTAB\\_Appointments\\_488251\\_7.pdf](http://michigan.gov/documents/treasury/Flint_RTAB_Appointments_488251_7.pdf) (attached as Ex. 55).

<sup>56</sup> Emergency Manager Order 3 ¶¶ 4-6, 25 (adopted Apr. 10, 2015), <https://www.cityofflint.com/wp-content/uploads/Order-No.-3.pdf> (attached as Ex. 56). The City Administrator was appointed by the Emergency Manager and can be removed only with the Board’s consent.

<sup>57</sup> *Id.*



and Beverly Walker-Griffea, Members of the Board; and Natasha Henderson, Flint City Administrator, are responsible for the violations of the Act by Flint's water system which have endangered and will continue to endanger the health of Flint's residents.

**A. Flint's water system is in violation of the Lead and Copper Rule's tap-water monitoring, reporting, and notification requirements**

The Lead and Copper Rule requires water systems to identify a pool of sampling sites prior to the commencement of a monitoring period.<sup>58</sup> This requirement is designed to target residences at high risk of lead contamination in drinking water, such as homes served by lead service lines.<sup>59</sup> In violation of the Rule, Flint's water system does not select sampling sites for lead monitoring based on a pre-established sampling pool. For Flint's most recent completed monitoring period, January–June 2015, the Director of the City's Department of Public Works admitted that Flint "thr[ew] bottles out everywhere just to collect as many [samples] as we can, to try and hit our number."<sup>60</sup> Similarly, email correspondence shows that the City has, during several monitoring periods, asked its own employees to submit tap-water samples, without regard to whether the employees were part of a pre-selected sampling pool.<sup>61</sup>

Under the Lead and Copper Rule, water systems that contain lead service lines also must draw fifty percent of their tap-water samples from sites served by a lead service line.<sup>62</sup> Flint's water system does not comply with this requirement. The water system reported to MDEQ that all the sample sites it used during the January–June 2015 monitoring period were residences served by lead service lines.<sup>63</sup> Flint's Utilities Administrator, however, admitted that he was not able to verify that all homes sampled were served by lead service lines.<sup>64</sup> This is because City records concerning the locations of lead service lines in the distribution system are stored on 45,000 paper notecards. Flint began converting these notecards into an electronic spreadsheet this fall, well after the January–June 2015 monitoring period.<sup>65</sup>

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<sup>58</sup> See 40 C.F.R. § 141.86(a).

<sup>59</sup> *Id.*

<sup>60</sup> See ACLU of Michigan, *Thirst for Truth: Who's to Blame for Flint Water Crisis?*, <https://www.youtube.com/watch?t=9&v=LTO9irD2f0Y> (posted Sept. 23, 2015).

<sup>61</sup> Email from Michael Glasgow, Flint Utilities Adm'r, to Flint municipal staff (June 1, 2015) (attached as Ex. 57).

<sup>62</sup> 40 C.F.R. § 141.86(a)(8).

<sup>63</sup> See, e.g., City of Flint, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (July 28, 2015) [hereinafter July 28 Report] (attached as Ex. 58).

<sup>64</sup> See ACLU of Michigan, *Thirst for Truth: Who's to Blame for Flint Water Crisis?*, *supra* note 60.

<sup>65</sup> See Ron Fonger, *Flint data on lead water lines stored on 45,000 index cards*, Michigan Live, Oct. 1, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/10/flint\\_official\\_says\\_data\\_on\\_lo.html](http://www.mlive.com/news/flint/index.ssf/2015/10/flint_official_says_data_on_lo.html) (attached as Ex. 59).

Flint's water system has also failed to sample the same sites across monitoring periods or document the reasons for declining to sample the same sites, as the Lead and Copper Rule requires.<sup>66</sup> Sampling new sites from one monitoring period to the next is permitted only if a site "is no longer accessible" to the water system or "no longer fits the requirements of a priority site."<sup>67</sup> Records show that in the January–June 2015 monitoring period, Flint's water system retested only thirteen of the one hundred sites it sampled in the previous monitoring period.<sup>68</sup> It did not provide the required explanation for these departures from the previous monitoring period's sampling sites.<sup>69</sup> Upon information and belief, Flint's water system concentrated its monitoring in areas where it anticipated low lead levels, due to recent infrastructure improvements, and selectively retested sites that had previously yielded low lead levels. Such selective sampling violates the Lead and Copper Rule's intention that water systems "do not use only those sampling locations with the lowest lead or copper levels."<sup>70</sup>

Flint's instructions to residents for the collection of tap-water samples also violate the Lead and Copper Rule. The Rule allows residents to collect the tap-water samples used to monitor lead in drinking water, so long as the water system instructs residents of the sampling procedures required by the regulations.<sup>71</sup> Tap-water samples must be "first-draw samples," meaning that the sample must be collected after water in the tap has stood motionless in the plumbing system for at least six hours.<sup>72</sup> Flint's instructions direct residents to flush their taps for five minutes prior to letting the water sit for the six required hours. This "pre-flushing" has been shown to "result in the minimization of lead capture and significant underestimation of lead levels in drinking water."<sup>73</sup> The water system's pre-flush instruction "negates the intent of the [Lead and Copper Rule] to collect compliance

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<sup>66</sup> 40 C.F.R. § 141.86(b)(4).

<sup>67</sup> U.S. EPA, *Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems* 25 (Mar. 2010), <http://water.epa.gov/lawsregs/rulesregs/sdwa/lcr/upload/Revised-Lead-and-Copper-Rule-Monitoring-and-Reporting-Guidance-for-Public-Water-Systems.pdf> (attached as Ex. 60).

<sup>68</sup> See July 28 Report, *supra* note 63 (reporting that the same sample sites were not used) (Ex. 58); see also Curt Guyette, *Lead Astray: An ACLU of Michigan investigation has found a stream of irregularities in Flint's water tests*, Michigan Democracy Watch Blog, Sept. 14, 2015, <http://aclumich.org/democracywatch/index.php/entry/lead-astray-an-aclu-of-michigan-investigation-has-found-a-stream-of-irregularities-in-flint-s-water-tests> (attached as Ex. 61).

<sup>69</sup> 40 C.F.R. § 141.90(a)(1)(v).

<sup>70</sup> U.S. EPA, *Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems*, *supra* note 67, at 25 (Ex. 60).

<sup>71</sup> 40 C.F.R. § 141.86(b)(2).

<sup>72</sup> *Id.* §§ 141.2, 141.86(b)(2).

<sup>73</sup> Mem. from Miguel Del Toral, U.S. EPA, to Thomas Poy, U.S. EPA, at 2 (June 24, 2015) (attached as Ex. 62).

samples under 'worst-case' conditions,"<sup>74</sup> and goes "against the intent of the monitoring protocol, since it changes the normal water use of the homeowners in the sample."<sup>75</sup>

Flint's water system is violating the Lead and Copper Rule's reporting requirements by representing to MDEQ that Flint's monitoring practices are in compliance with the Rule. The City's water system did not provide documentation to MDEQ justifying its selection of new sample sites in the January–June 2015 monitoring period, and, upon information and belief, is not accurately reporting information concerning whether sampled sites meet required regulatory criteria.<sup>76</sup>

The Lead and Copper Rule also requires Flint's water system to notify each resident whose tap water was sampled of the lead results.<sup>77</sup> Upon information and belief, Flint has failed and continues to fail to properly notify all residents whose tap water was tested for lead of the individual monitoring results.

**B. Flint's water system has failed to maintain optimal corrosion-control treatment**

The Lead and Copper Rule required all large public water systems, including Flint's water system, to install an "optimal corrosion control treatment" program by January 1, 1997.<sup>78</sup> After a system has optimized its corrosion-control treatment, the regulations require the system to "continue to operate and maintain optimal corrosion control treatment."<sup>79</sup> Since April 2014, Flint's water system has not maintained an optimal corrosion-control treatment program. Historically, the water system complied with the corrosion-control requirements by purchasing treated water from Detroit. When Flint switched its water source to the Flint River in April 2014, it did nothing to treat the Flint River water to control corrosion. This failure to maintain optimized corrosion control violates the Lead and Copper Rule.

Although Flint's water system has resumed its purchase of treated water from Detroit, it has not disavowed its erroneous interpretation of the Lead and Copper Rule's corrosion-control requirements. Nor has it committed to maintaining optimized corrosion control when it switches water sources again this summer to the KWA pipeline. Flint's water system's failure to maintain an optimized corrosion-control treatment program is likely to recur in the future.

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<sup>74</sup> *Id.*

<sup>75</sup> Letter from Cynthia Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008) (attached as Ex. 63).

<sup>76</sup> See 40 C.F.R. § 191.90(a)(1)(i), (a)(1)(v); *supra* pp. 11-12.

<sup>77</sup> 40 C.F.R. § 141.85(d)(1).

<sup>78</sup> *Id.* § 141.81(d)(4).

<sup>79</sup> *Id.* § 141.82(g).

### **III. The State of Michigan's failure to maintain a schools testing and remediation program violates the Safe Drinking Water Act**

The Act requires each state to establish a program "to assist" schools and day care centers in "testing for, and remedying, lead contamination in drinking water."<sup>80</sup> Test results must be made available at schools, with notification to parents and teachers.<sup>81</sup> Michigan, upon information and belief, does not maintain a program for school lead testing, remediation, and notification.<sup>82</sup> Accordingly, Governor Snyder and MDEQ Director Wyant are presently in violation of the Act's schools provision.<sup>83</sup>

### **IV. Intent to Sue**

The City of Flint and Michigan state officials have been and continue to be in violation of the Lead and Copper Rule's requirements for monitoring and sampling tap water for lead, notifying the public of and reporting to the State tap-water monitoring results, and corrosion control. Governor Snyder and MDEQ Director Dan Wyant are in violation of the Act's requirement to maintain a program to assist Michigan schools with testing and remediating lead in school drinking water. These violations are likely to continue and to recur in the future absent a judicial decree ordering City and State officials to comply with the Act. If the City of Flint and the Michigan state officials identified above fail to cure their noncompliance with the Act within sixty days, Concerned Pastors for Social Action, Melissa Mays, ACLU of Michigan, and NRDC will file suit in federal district court seeking declaratory relief, injunctive relief, and litigation costs, as appropriate.

The name, address, and telephone number of each person giving notice pursuant to this letter are:

Concerned Pastors for Social Action  
2200 Forrest Hill  
Flint, MI 48504  
(810) 394-6787  
Attention: Pastor Allen Overton

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<sup>80</sup> 42 U.S.C. § 300j-24(d)(1).

<sup>81</sup> *Id.* § 300j-24(d)(2).

<sup>82</sup> Although MDEQ recently announced "an education campaign" to help Michigan schools learn how to test their water for lead, MDEQ has yet to release the details of this effort, including whether it will offer the kind of assistance with testing, remediation, and notification contemplated by the Safe Drinking Water Act. *See Higgins, Michigan to launch lead education effort statewide, supra* note 44 (Ex. 51).

<sup>83</sup> MDEQ has primary enforcement authority in Michigan for the Safe Drinking Water Act. *See* MDEQ, Drinking Water, [http://www.michigan.gov/deq/0,4561,7-135-3313\\_3675--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3675--,00.html) (last visited Nov. 13, 2015) (attached as Ex. 64).

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Melissa Mays  
3714 Beecher Road  
Flint, MI 48503

American Civil Liberties Union of Michigan  
2966 Woodward Avenue  
Detroit, MI 48103  
(313) 578-6814  
Attention: Michael Steinberg

Natural Resources Defense Council  
1152 15th Street, NW, Suite 300  
Washington, DC 20005  
(202) 289-2385  
Attention: Dimple Chaudhary

Do not hesitate to contact us if you would like to discuss this matter.

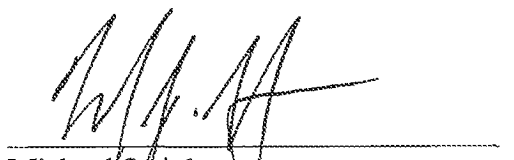
Respectfully,

  
Dimple Chaudhary  
Natural Resources Defense Council  
1152 15th Street, NW, Suite 300  
Washington, DC 20005  
(202) 289-2385

Sarah Tallman  
Anjali Waikar  
Evan Feinauer  
Natural Resources Defense Council  
20 North Wacker Drive, Suite 1600  
Chicago, IL 60606  
(312) 651-7918

*Counsel for Concerned Pastors for Social Action,  
Melissa Mays, and Natural Resources Defense  
Council*

Enclosure

  
Michael Steinberg  
Brooke Tucker  
American Civil Liberties Union of  
Michigan  
2966 Woodward Avenue  
Detroit, MI 48103  
(313) 578-6814

*Counsel for American Civil Liberties Union  
of Michigan*

November 16, 2015

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cc:

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U.S. EPA Headquarters  
William Jefferson Clinton Building  
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Attorney General Bill Schuette  
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miag@michigan.gov

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4. Steve Carmody, *Flint opting to get its future tap water from Lake Huron*, Michigan Radio, Mar. 25, 2013
5. Karegnondi Water Authority, About, <http://www.karegnondi.com/#!/about/c20r9>
6. Emergency Manager, Resolution to Purchase Capacity from Karegnondi Water Authority (adopted Mar. 29, 2013)
7. Letter from Andy Dillon, State Treasurer, to Edward Kurtz, Emergency Manager (Apr. 11, 2013)
8. Sarah Schuch, *KWA pipeline work continues as Flint water lead concerns rise*, Michigan Live, Sept. 25, 2015
9. Ron Fonger, *Detroit gives notice: It's terminating water contract covering Flint, Genesee County in one year*, Michigan Live, Apr. 19, 2013
10. Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Dep't (Mar. 7, 2014)
11. Cost of Service Study (2011), Appendix 8 to Analysis of the Flint River as a Permanent Water Supply for the City of Flint
12. Kristin Longley, *Water pipeline v. Flint River: City of Flint studying its drinking water options*, Michigan Live, Jan. 22, 2011
13. Dominic Adams, *Flint River now an option for drinking water following Detroit's termination of contract*, Michigan Live, July 23, 2013
14. Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation, July 16, 2015
15. Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post, July 10, 2015

16. Laura Gottesdiener, *Flint, Mich., residents find state water control hard to swallow*, Al Jazeera America, Apr. 3, 2015
17. Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live, Sept. 5, 2014
18. Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press, Jan. 23, 2015
19. Mich. Dep't of Env'tl. Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014)
20. U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water (last updated Dec. 13, 2013)
21. Marc Edwards, *Test Update: Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015)
22. Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015)
23. Brianna Owczarzak, *GM says no to Flint water*, WNEM, Oct. 14, 2014
24. Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015)
25. Mich. Dep't of Env'tl. Quality, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Aug. 20, 2015)
26. U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013)
27. U.S. EPA, Basic Information About Lead in Drinking Water (last updated June 26, 2015)
28. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015)
29. Nancy Kaffer, *MDEQ e-mails show stunning indifference to Flint peril*, Detroit Free Press, Oct. 22, 2015
30. *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study, Sept. 16, 2015
31. Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live, Sept. 15, 2015
32. Marc Edwards et al., *Lead testing results for water sampled by residents*, Flint Water Study, Sept. 28, 2015



33. Ron Fonger, *Feds sending in experts to help Flint keep lead out of water*, Michigan Live, Sept. 10, 2015
34. *Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community* (PowerPoint Presentation) (presented on September 24, 2015)
35. *Study suggests Flint's water causing increased lead poisoning*, Michigan Radio, Sept. 28, 2015
36. Ron Fonger, *State says data shows no link to Flint River, elevated lead in blood*, Michigan Live, Sept. 24, 2015
37. *Did this Michigan Town Poison its Children?*, U.S. News & World Report, Sept. 24, 2015
38. Steve Carmody, *Four Flint schools have high lead levels in their water*, Michigan Radio, Oct. 8, 2015
39. Ctrs. for Disease Control & Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013)
40. 2009-2013 American Community Survey 5-Year Estimates, 2013
41. *2012 Annual Data Report on Blood Lead Levels of Children in Michigan* (Apr. 30, 2013)
42. Am. Cancer Soc'y, *Lead, Lead in the Environment* (last updated May 27, 2014)
43. *City of Flint Issues Lead Advisory*, City of Flint, Sept. 25, 2015
44. Steve Carmody, *Flint officials exploring return to Detroit water*, Michigan Radio, Sept. 28, 2015
45. John Wisely, *Snyder announces \$12 million plan to fix Flint water*, Detroit Free Press, Oct. 8, 2015
46. Amanda Emery, *Flint reconnects to Detroit water, may take 3 weeks to clear all pipes*, Michigan Live, Oct. 16, 2015
47. Letter from Sen. Jim Ananich, Mich. Senate Minority Leader, to Susan Hedman, U.S. EPA, and Gina McCarthy, U.S. EPA (Oct. 21, 2015)
48. Letter from Rep. Daniel Kildee, U.S. Congressman, to Gina McCarthy, U.S. EPA (Oct. 21, 2015)
49. Press Release, Gov. Rick Snyder, *Gov. Rick Snyder announces Flint Water Task Force to review state, federal and municipal actions, offer recommendations* (Oct. 21, 2015)

50. Press Release, U.S. EPA, *EPA Establishes Safe Drinking Water Task Force to Provide Technical Expertise to MDEQ and City of Flint* (Oct. 16, 2015)
51. Lori Higgins, *Michigan to launch lead education effort statewide*, Detroit Free Press, Oct. 13, 2015
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60. U.S. EPA, *Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems* (Mar. 2010)
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63. Letter from Cynthia Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008)
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**Thelen, Mary Beth (DEQ)**

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**From:** Baird, Richard (GOV)  
**Sent:** Wednesday, December 23, 2015 5:30 PM  
**To:** Lyon, Nick (DHHS); Wyant, Dan (DEQ)  
**Subject:** Fwd: Role  
**Attachments:** Flint Outline of Role and Responsibility.docx

Keith  
More Flint  
Info

*Sent from my Verizon Wireless 4G LTE DROID*

----- Forwarded message -----

From: "Baird, Richard (GOV)" <[bairdr@michigan.gov](mailto:bairdr@michigan.gov)>

Date: Dec 23, 2015 12:04 PM

Subject: Role

To: "Hollins, Harvey (GOV)" <[hollinsh@michigan.gov](mailto:hollinsh@michigan.gov)>

Cc:

Outline of Role and Responsibility—Harvey Hollins  
Flint After Action Task Force and Local/County/State Coordination  
Key Activities Draft

- I. Confirm key stakeholders that should convene on a regular basis to do the following:
  - a. Identify resources and support required to manage continued testing, cognitive assessment, updates on progress, impediments, community outreach, etc.
  - b. Assess delivery of resources protocols and adjust (door to door, neighborhood centers, etc.)
  - c. Agree a communications strategy within the stakeholder community and aggressively inform the residents of Flint of resources available and consequences of inaction.
- II. Create a short/medium and long term plan to capture roles and responsibilities at the local, county, state (and federal if appropriate) levels which will be reviewed and approved by the key stakeholder body.
- III. Be responsive to mayor, media, residents and all stakeholders about what currently is being done and how the way forward is being envisioned and agreed by stakeholder leadership.
- IV. Work to eliminate duplication of effort and ensure that members of the science community engaged in assessing and protecting the public health have unfettered access to data, reports, etc. and establish a mutually agreeable process to surface and resolve conflicting interpretations of data when it occurs.
- V. Coordinate with State departments (DHHS, DEQ, Executive Office) to secure funding needed and subject matter resources to ensure long term monitoring and remediation efforts.
- VI. Ensure that the recommendations of the After Action Task Force are executed.
- VII. Provide weekly status updates to Governor Snyder and members of his team charged with supporting the Chief Coordinator.
- VIII. Determine how what is being done in Flint is relevant to other communities and needs to be shared as part of a state wide strategy. This may also impact future policy development to address long term infrastructure remediation.

**Thelen, Mary Beth (DEQ)**

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**From:** Wyant, Dan (DEQ)  
**Sent:** Monday, November 30, 2015 3:06 PM  
**To:** Scott, Allison (GOV); Muchmore, Dennis (GOV); Agen, Jarrod (GOV); Emmitt, Beth (GOV); Bedan, Morgan (GOV); Baird, Richard (GOV)  
**Cc:** Wyant, Dan (DEQ); Dickinson, Sarah (GOV); Edgerton, Shelly (LARA); Dykema, Linda D. (DHHS)  
**Subject:** 2015-11-30 Flint Drinking Water Action Plan Update - FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGED  
**Attachments:** 2015-11-30 Flint Drinking Water Action Plan Update.pdf; 11-23-2015 Flint Drinking Water Events Timeline.pdf; EisenhowerElementary\_Report.pdf; 18-Point Partnering Plan 11-23-15.pdf  
**Importance:** High

Dear Governor's Office:

Please provide the following to the Governor as a part of his daily briefing packet. If you have any questions, please let us know.

- Flint Drinking Water Action Plan Update
- Revised Flint Drinking Water Events Timeline
- Eisenhower Elementary School report
- 18-Point Partnering Plan dated November 23, 2015 (we sent this last week but sending again as a reminder)

As a reminder we will prepare these reports to you weekly, every Monday afternoon, for the previous week's actions. I have also added Richard Baird to this weekly email.

Thank you.

Dan Wyant  
Director

## Flint Drinking Water Action Plan Update

### FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGE

#### Key Actions:

Due to the Thanksgiving holiday, this week's report is abbreviated.

#### Positions:

There are no new positions to report since last week.

#### Concerns:

There are no new concerns to report since last week.

#### Significant Events:

There are no significant events to report since last week.

#### Changes from Previous Report:

- The Flint Drinking Water Events Timeline has been revised. The header and footer were updated, and acronyms were generally removed. Permit numbers have been deleted, and dates were filled in to the extent possible. The most significant change is the December 31, 2014, item regarding end of the 1st monitoring period. This was rewritten to be consistent with the June 30, 2015, end of the 2nd monitoring period item. The compliance letter reporting the results was added on March 30, 2015.
- School sampling was suspended due to the holiday and is scheduled to continue on Saturday, December 5, 2015.
- The report for Eisenhower Elementary School was completed, has gone through final publishing, and will be posted to the Flint water Web site: [www.mi.gov/flintwater](http://www.mi.gov/flintwater).
- There are now a total of four schools in Flint that are not part of the Flint Community Schools that have requested plumbing assessments and sampling of their facilities. These facilities will be evaluated once the Flint school system evaluation has been completed. The four facilities include: Eagle's Nest Academy, Powers Catholic High School, International Academy of Flint, and St. Paul Lutheran School. It is anticipated that these facilities will be evaluated beginning sometime in January 2016.

**FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGE**

Flint Drinking Water Action Plan Update

Page 2

- The internal after action group met on November 24, 2015, to discuss the newly-created 18-Point Partnering Plan. Each point was reviewed, and members were instructed to use the document as a plan moving forward. The Partnering Plan is meant to be a living document and will be revised as needed.

**Other Items:**

- Attached is the revised Flint Drinking Water Events Timeline.
- Attached is the Eisenhower Elementary School report.

Prepared by: George Krisztian, Flint Action Plan Coordinator  
Laboratory Director  
Department of Environmental Quality  
Telephone: 517-284-6719  
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November 30, 2015

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
Pre-1967	Flint Water Treatment Plant in operation using Flint River for drinking water	1
Post-1967	Flint switched to Detroit Water and Sewerage Department for drinking water	None
January 2006	Discussions regarding Karegnondi Water Authority, <i>Preliminary Long-Term Water Supply for Genesee County</i>	2
June 25, 2009 September 2009	<i>Lake Huron Water Supply Study Karegnondi Water Authority Executive Summary and Preliminary Engineering Report</i>	3
March 2013	<i>Analysis of the Flint River as a Permanent Water Supply for the City of Flint</i> ; Prepared for: City of Flint dated July 2011	4
April 2013	Flint notifies Detroit Water and Sewerage Department of contract discontinuation and joins the Karegnondi Water Authority	5
April 2013	Detroit Water and Sewerage Department sets termination of Flint water service contract to April 17, 2014	6
June 2013	Flint notifies the Department of Environmental Quality of intent to operate Flint Water Treatment Plant full time using Flint River for drinking water	7
April 2014	The Michigan Department of Environmental Quality issues Flint Water Treatment Plant construction permits for full time operation enhancements W141025 and W141026	9
May 2014	Flint stops purchasing Detroit Water and Sewerage Department water. Starts using the City of Flint Water Treatment Plant and Flint River for drinking water	10
August 2014	Flint <i>E. coli</i> bacteria violation, Localized System Boil Water Advisory	11
September 2014	Disinfection Byproducts compliance communication; the Michigan Department of Environmental Quality requests preemptive Operational Evaluation	12
September 2014	Flint Total Coliform Bacteria violation, Localized System Boil Water Advisory	13



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
October 2014	General Motors announces decision to stop using Flint River as source for production water	14
December 2014	Disinfection Byproducts quarterly violation begins	15
December 31, 2015	1st 6-month round of lead and copper monitoring ends. Results due from Flint to Michigan Department of Environmental Quality on January 10, 2015	None
January 21, 2015	City of Flint Public Meeting regarding disinfection byproducts and bacteria	17
February 26, 2015	E-mail from United States Environmental Protection Agency to Michigan Department of Environmental Quality regarding elevated lead sample	18
February 27, 2015	E-mail from United States Environmental Protection Agency to Michigan Department of Environmental Quality inquiring about Optimized Corrosion Control Treatment	19
February 27, 2015	Michigan Department of Environmental Quality response to United States Environmental Protection Agency email with statement regarding optimized corrosion control program	20
March 5, 2015	2nd Disinfection Byproducts quarterly violation notice	21
March 30, 2015	Michigan Department of Environmental Quality notifies Flint of Lead/Copper Monitoring Results.	16
April 3, 2015	Long Term 2 Enhanced Surface Water Treatment Rule Letter	22
April 6, 2015	Flint proposes installation of Granular Activated Carbon Filter media to reduce disinfection byproducts	23
April 23, 2015	United States Environmental Protection Agency e-mail to Michigan Department of Environmental Quality regarding corrosion control treatment	24
April 24, 2015 May 1, 2015	Michigan Department of Environmental Quality responds to United States Environmental Protection Agency regarding corrosion control treatment	25

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
April 27, 2015	United States Environmental Protection Agency provided bottles to 212 Browning for lead/copper analyses	26
May 6, 2015	Lead service line replaced at 212 Browning. United States Environmental Protection Agency on-site	27
May 28, 2015	Internal United States Environmental Protection Agency e-mail regarding results at 212 Browning	29
June 9, 2015	3rd Disinfection Byproducts quarterly violation notice	30
June 10, 2015	Semi-Annual Conference call with United States Environmental Protection Agency	31
June 30, 2015	E-mail from United States Environmental Protection Agency scheduling conference call on July 21, 2015 regarding elevated lead result and concerns regarding corrosion control	32
June 30, 2015	2nd 6-month round of lead and copper monitoring ends. Results due from Flint to Michigan Department of Environmental Quality on July 10, 2015	None
July 9, 2015	Michigan Department of Environmental Quality informed that United States Environmental Protection Agency draft internal memo is on ACLU website	33
July 14, 2015	Michigan Department of Environmental Quality issues construction permit to Flint for Granular Activated Carbon filter media W151055	34
July 21, 2015	Conference call with United States Environmental Protection Agency (Lead and Copper Rule implementation and Flint) during which it informs Michigan Department of Environmental Quality its interpretation of Lead and Copper Rule	35
July 24, 2015	Michigan Department of Environmental Quality e-mail and draft letter 90th percentile lead determination = 11 parts per billion and City of Flint requirement to add corrosion control treatment	36

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
July 28, 2015	Michigan Department of Environmental Quality received blood lead level information from Michigan Department of Health and Human Services indicating that results since the switch to the Flint River are consistent with past years seasonal variations	37
August 4, 2015	Meeting with city representatives at Governor's office	38
August 17, 2015	Michigan Department of Environmental Quality notifies Flint of lead/copper monitoring results and requires City to install corrosion control treatment	39
August 23, 2015	Michigan Department of Environmental Quality notified by an external party that a water quality study was about to begin in Flint	40
September 2, 2015	Disinfection Byproducts return to compliance	43
September 11, 2015	United States Environmental Protection Agency e-mail confirming that Michigan Department of Environmental Quality was never sent the draft June 24, 2015 memo	44
September 21, 2015	Meeting with Congressional representatives, legislators, United States Environmental Protection Agency and Michigan Department of Environmental Quality to discuss issues with water quality in Flint	45
September 22, 2015	Meeting/Conference call with Michigan Department of Health and Human Services, Genesee County Health Department, and Michigan Department of Environmental Quality to discuss lead education/outreach	46
September 24, 2015	Hurley Children's Hospital data reveals elevated blood lead levels in Flint children	47
September 24, 2015	Michigan Department of Health and Human Services response affirms State blood lead level data is more comprehensive than Hurley Hospital data	None

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
September 25, 2015	Flint issues Lead Advisory regarding drinking water	48
October 1, 2015	State Chief Medical Officer confirms Hurley blood lead level data	None
October 1, 2015	Genesee County Health Department issues "Do Not Drink" Advisory	49
October 2, 2015	Michigan Department of Environmental Quality and Michigan Department of Health and Human Services press conference. Governor's Flint Action Plan announced.	50
October 2, 2015	Genesee County Health Department school screening water samples collected for lead analysis	51
October 8, 2015	Governor Press Conference: Flint to reconnect to Great Lakes Water Authority/Detroit Water and Sewerage Department	52
October 15, 2015	State Legislature authorizes a \$9 million to assist the City of Flint to pay for the return to the Detroit water system and to fund staff at schools to gauge lead exposure	None
October 16, 2015	First weekly coordination meeting held between the City of Flint and state agencies	None
October 16, 2015	Michigan Department of Environmental Quality meets with Flint Schools Superintendent and Genesee County Health Department	None
October 16, 2015	Flint switches back to Detroit Water and Sewerage Department for water	53
October 21, 2015	Governor Snyder announces formation of Flint Water Task Force to complete an After-Action Review	None
October 28, 2015	Michigan Department of Environmental Quality issues construction permit for additional corrosion control treatment W151104	54
October 30, 2015	Michigan Department of Environmental Quality letter to Flint regarding corrosion control treatment operation	55

## **MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE**

<b>Date</b>	<b>Event</b>	<b>Attachment</b>
<b>November 3, 2015</b>	<b>United States Environmental Protection Agency Memorandum regarding "Lead and Copper Rule Requirements for Optimal Corrosion Control Treatment for Large Drinking Water Systems"</b>	<b>56</b>
<b>November 4, 2015</b>	<b>United States Environmental Protection Agency Memorandum regarding "Transmittal of Final Report – High Lead at Three Residences in Flint, Michigan"</b>	<b>57</b>
<b>Mid-Late 2016</b>	<b>Planned connection to Karegnondi Water Authority (Lake Huron water to Flint Water Treatment Plant)</b>	<b>None</b>

# **EISENHOWER ELEMENTARY SCHOOL**

Outlet Sampling and Plumbing Assessment Recommendations

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1235 Pershing Street, Flint, Michigan 48503



## **BACKGROUND INFORMATION**

On Friday, October 30, 2015, the Department of Licensing and Regulatory Affairs (DLARA) and the Department of Environmental Quality (DEQ) conducted an assessment of Eisenhower Elementary School's plumbing system to gain a comprehensive understanding of how water moves through the building and what types of plumbing materials are used. Two outlet buildings in addition to the main school building were included in the assessment. The assessment identified the following potential sources of lead leaching into drinking water:

- Lead solder joints on copper piping
- Brass valves and brass fittings
- Brass components in fixtures
- Galvanized piping

The assessment also identified 43 faucets or fountains that provide water for drinking, cooking, and/or food preparation, 37 faucets/fountains in the main school building, four faucets/fountains in out building unit 1, and two faucets/fountains in out building unit 2. The team developed a sequence for sampling the faucets/fountains in each building based on how the water travels through each building.

On Saturday, October 31, 2015, the DEQ and the DLARA completed sampling of the 37 faucets/fountains in the main school building, the four faucets/fountains in out building unit 1, and the two faucets/fountains in out building unit 2, each in the order determined by the plumbing assessment from the previous day, following a stagnation period of over 12 hours. At each of the 43 faucets/fountains identified, staff collected four samples. Two initial, 125-milliliter samples (P1 and P2), were collected immediately after turning on the tap. The water was then flushed for 30 seconds and a third, 125-milliliter sample (F01) was collected. Finally, the water was flushed for another two minutes, and the fourth 125-milliliter sample (F02) was collected. These samples were used to determine the impact of any lead sources in and around each specific faucet/fountain and its connecting plumbing.

The DEQ and the DLARA then completed consecutive sampling at three of the 37 faucets/fountains in the main school building, one of the four faucets/fountains in out building unit 1, and one of the two faucets/fountains in out building unit 2, five sites in total. This consecutive sampling was used to determine the impact of any lead sources located deep in the supply plumbing at each of these buildings. The three sites in the main school building included one site near the building service line, one site near the plumbing mid-point, and one site at the far end of the plumbing system. At each of these five sites, staff collected 10, 1-liter samples. The 10 samples were collected immediately after turning on the tap, and consecutively, without any flushing time in between.

## **WATER SERVICE INFORMATION**

A four-inch diameter cast iron water service line enters the main school building in the boiler room northwest wall located in the west corner of the building. Piping in the boiler room immediately transitions into galvanized metal piping for cold water lines. Three separate galvanized cold water supply lines exit the boiler room. One in the north corner serves a single hose bib directly outside the boiler room. A second line exits the southeast wall and serves the adjacent janitors closet and dressing room bathrooms. The third line exits the boiler room on the northeast side through a utility tunnel that runs below the school hallways and serves all rooms in the main school building. This supply line then runs between the first and second floors on the southeast end of

the building. Copper piping with lead solder joints branches off of the galvanized supply line for cold water supply to each room. Hot water is distributed in continuous loops that feed from and return to a central water heater in the boiler room. Hot water piping material, where exposed, was copper piping with lead solder joints. Brass valves were seen throughout the building.

Out building unit 1 has a separate customer service line from the City water main constructed using copper piping material. The service line comes out of the ground beneath the building and within the building is copper pipe with lead free solder joints.

Out building unit 2 has a separate customer service line from the City water main constructed using copper piping material. The service line comes out of the ground beneath the building and within the building is copper pipe with lead free solder joints.

### **Outlets With Lead Levels Greater Than 15 Parts per Billion**

The DEQ recommends school facilities take action if samples from any drinking water outlets show lead levels greater than 15 parts per billion. Based on the sampling conducted at 43 faucets/fountains on October 31, 2015, the following 18 drinking water outlets had lead water level results greater than 15 parts per billion. Each of these 18 outlets is listed below with its sample results, including a description of the potential source(s) of lead, and recommended actions for the school to take.

#### **Outlet: Bubbler Drinking Fountain (01DW001)**

Location: West corner, Gymnasium Multipurpose Room

Results: P1=32 parts per billion, P2=6 parts per billion

F01=5 parts per billion, F02=3 parts per billion

These results suggest the highest contribution of lead may be from the bubbler itself. This bubbler fixture is made of chrome plated brass and is believed to have a brass valve. The connection piping with the unit may also contain some brass components.

Replacement of this bubbler tap and its connection plumbing with lead-free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.





#### **Outlet: Water Cooler Fountain (01WC002)**

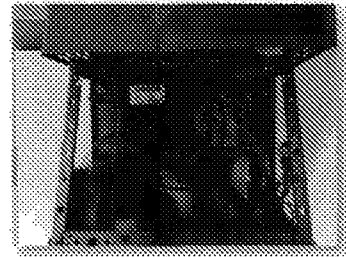
Location: Hallway between Gym and Auditorium, northeast side

Results: P1=17 parts per billion, P2=17 parts per billion

F01=12 parts per billion, F02=3 parts per billion

These results suggest the highest contribution of lead may be from the water cooler unit. The water cooler is an Elkay model LKEZFS8. This model contains some brass components. Connecting plumbing to the cooler unit may also contain brass components.

Replacement of the entire unit is recommended and will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.



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#### **Outlet: Sink Faucet (01CF004)**

Location: Classroom 109, northwest wall

Results: P1=17 parts per billion, P2=10 parts per billion

F01=1 part per billion, F02=2 parts per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Hot and cold water lines connect to this faucet with a brass mixer fitting under the sink. Connecting plumbing in the cabinet under the sink may also contain additional brass components.

Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.



This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.

**Outlet: Bubbler Fountain (02DW020)**

Location: Classroom 201, southeast wall

Results: P1=37 parts per billion, P2=24 parts per billion  
F01=2 parts per billion, F02=non-detect

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. This bubbler fixture is made of chrome plated brass and has a brass connector on the underside of the sink. The bubbler also has a chrome plated brass flow regulator installed between the operating valve and the outlet. The connecting plumbing is copper with lead solder and includes a brass shut off valve.



Replacement of this bubbler tap and its connection plumbing with lead-free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

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**Outlet: Sink Faucet (02CF022)**

Location: Classroom 202, northwest wall

Results: P1=7 parts per billion, P2=24 parts per billion  
F01=2 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Connecting plumbing in the cabinet under the sink is made up of brass connectors; copper piping with lead solder and brass shut off valves.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

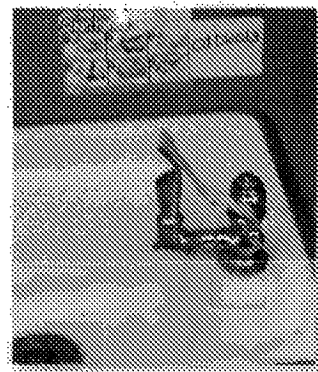
This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.

### **Outlet: Bubbler Fountain (01DW013)**

Location: Classroom 104, southwest wall

Results: P1=43 parts per billion, P2=106 parts per billion  
F01=3 parts per billion, F02=2 parts per billion

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. This bubbler fixture is made of chrome plated brass and has a brass connector on the underside of the sink. Connecting plumbing in the cabinet under the sink is made up of brass connectors; copper piping with lead solder, and a brass shut off valve.



Replacement of this bubbler tap and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

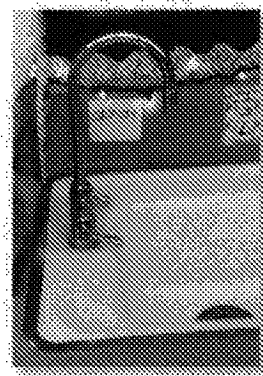
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### **Outlet: Sink Faucet (01CF014)**

Location: Classroom 104, southwest wall

Results: P1=36 parts per billion, P2=36 parts per billion  
F01=2 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Connecting plumbing in the cabinet under the sink is made up of brass connectors; copper piping with lead solder and brass shut off valves.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

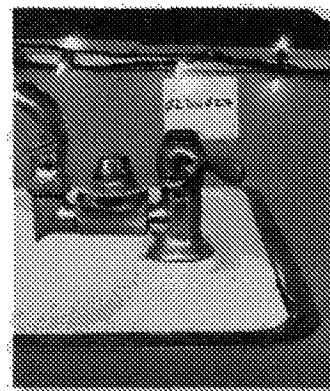
This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.

**Outlet: Bubbler Fountain (02DW027)**

Location: Classroom 204, southwest wall

Results: P1=18 parts per billion, P2=8 parts per billion  
F01=2 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. This bubbler fixture is made of chrome plated brass and has a brass connector on the underside of the sink. The bubbler also has a chrome plated brass flow regulator installed between the operating valve and the outlet. The connecting plumbing is copper with lead solder and includes a brass shut off valve.



Replacement of this bubbler tap and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

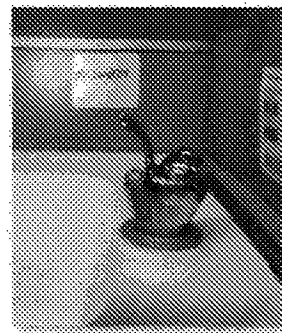
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**Outlet: Bubbler Fountain (02DW029)**

Location: Classroom 205, northeast wall

Results: P1=39 parts per billion, P2=14 parts per billion  
F01=11 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. This bubbler fixture is made of chrome plated brass and has a brass connector on the underside of the sink. Connecting plumbing in the cabinet under the sink is made up of brass connectors and copper piping with lead solder.



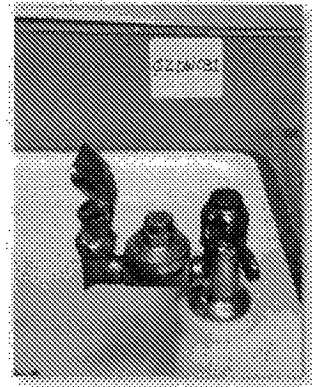
Replacement of this bubbler tap and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

### **Outlet: Bubbler Fountain (02DW031)**

Location: Classroom 206, southwest wall

Results: P1=84 parts per billion, P2=7 parts per billion  
F01=1 part per billion, F02=non-detect

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. This bubbler fixture is made of chrome plated brass and has a brass connector on the underside of the sink. The bubbler also has a chrome plated brass flow regulator installed between the operating valve and the outlet. Connecting plumbing in the cabinet under the sink should be checked for brass components and copper piping with lead solder.



Replacement of this bubbler tap and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

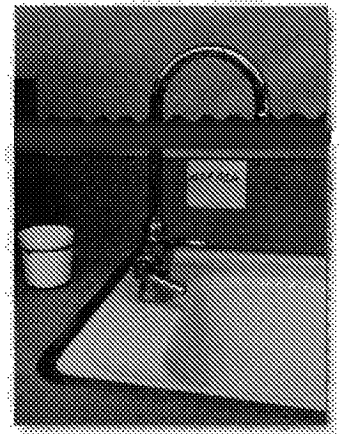
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### **Outlet: Sink Faucet (01CF016)**

Location: Classroom 106, northeast wall

Results: P1=402 parts per billion, P2=61 parts per billion  
F01=4 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Connecting plumbing in the cabinet under the sink is partly made up of brass connectors; copper piping with lead solder, and brass shut off valves.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.

### **Outlet: Sink Faucet (02CF032)**

Location: Classroom 207, northeast wall

Results: P1=21 parts per billion, P2=23 parts per billion  
F01=5 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Connecting plumbing in the cabinet under the sink is partly made up of brass connectors; copper piping with lead solder, and brass shut off valves.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

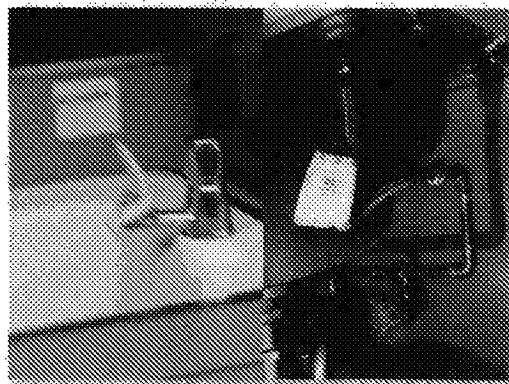
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### **Outlet: Bubbler Fountain (02DW033)**

Location: Classroom 207, northeast wall

Results: P1=20 parts per billion, P2=4 parts per billion  
F01=3 parts per billion, F02=3 parts per billion

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. Parts of this bubbler fixture are made of brass and it has a brass connector on the underside of the sink. Connecting plumbing in the cabinet under the sink is partly made up of brass connectors; copper piping with lead solder, and a brass shut off valve.



Replacement of this bubbler tap and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

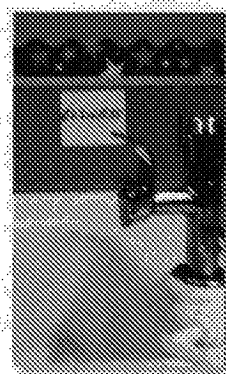
#### **Outlet: Bubbler Fountain (02DW035)**

Location: Classroom 208, southwest wall

Results: P1=12 parts per billion, P2=19 parts per billion  
F01=6 parts per billion, F02=3 parts per billion

These results suggest the highest contribution of lead may be from the bubbler and its connecting plumbing. This bubbler fixture is made of chrome plated brass and has a brass connector on the underside of the sink. Connecting plumbing in the cabinet under the sink should be checked for brass components and copper piping with lead solder.

Replacement of this bubbler tap and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.



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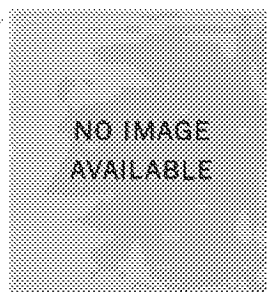
#### **Outlet: Sink Faucet (02CF034)**

Location: Classroom 208, southwest wall

Results: P1=19 parts per billion, P2=12 parts per billion  
F01=3 parts per billion, F02=2 parts per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Connecting plumbing in the cabinet under the sink should be checked for brass components and copper piping with lead solder.

Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

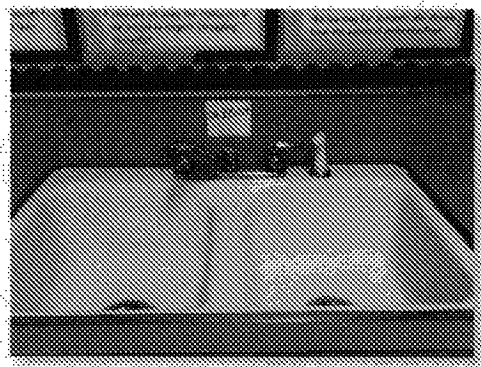


### **Outlet: Kitchen Faucet (01KC019)**

Location: Room 108, southwest wall

Results: P1=17 parts per billion, P2=5 parts per billion  
F01=4 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. This fixture appears to be a Delta two handled faucet. This model faucet typically has a brass tube in its deck body and may contain some additional brass components. Connecting plumbing in the cabinet under the sink should be checked for brass components and copper piping with lead solder.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.

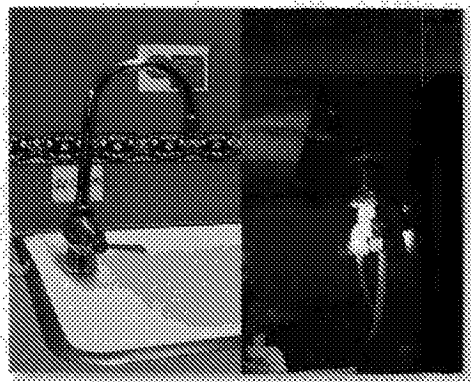
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### **Outlet: Sink Faucet (02CF036)**

Location: Classroom 209, southwest wall

Results: P1=7 parts per billion, P2=21 parts per billion  
F01=5 parts per billion, F02=1 part per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The base of this faucet is chrome plated brass, and has a brass connection on the underside of the sink. Hot and cold water lines connect to this faucet with a brass mixer fitting under the sink. Connecting plumbing in the cabinet under the sink may also contain additional brass connectors and copper plumbing with lead solder.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.



#### **Outlet: Kitchen Faucet, Left (04KC043)**

Location: Outbuilding Unit 2 DHHS Office

Results: P1=17 parts per billion, P2=3 parts per billion  
F01=2 parts per billion, F02=3 parts per billion

These results suggest the highest contribution of lead may be from the faucet and its connecting plumbing. The faucet is a Delta 400. This model faucet valve has brass components. This style faucet also has a mixing valve that may allow mixing of hot and cold water. Connecting plumbing in the cabinet under the sink may also contain brass components.



Replacement of this faucet and its connection plumbing with lead free materials will significantly reduce lead exposure at this location. If replacement is not currently feasible, sample results indicate that flushing this tap for 3 minutes following periods of stagnation is likely to reduce lead concentrations and lead exposure.

This faucet also has an aerator/screen at the outlet. If the faucet is not replaced, the aerator/screen should be removed, inspected for particulate accumulations, scrubbed clean, and reinstalled. If particulates are found, the aerator/screen should be periodically checked and cleaned.

## Outlets With Lead Levels 15 Parts per Billion or Less

While the remaining 25 outlets showed sample results to be at levels requiring no further action, several recommendations have been identified.

The fourth sample (F02) at all 43 outlets following approximately 3 minutes of use and flushing at a reduced flow resulted in reduced lead concentrations of 3 parts per billion or less. This indicates that flushing of all taps used for drinking, cooking, and/or food preparation for 4 minutes following periods of stagnation will further reduce lead exposure. It is recommended that a flushing operational procedure be developed for use by staff responsible for plumbing operations and maintenance with emphasis on flushing after weekends and holidays.

Seventeen of these twenty five outlets are comprised of similar materials as the outlets listed above and could potentially experience higher lead levels under extended periods of stagnation. These faucets/fountains include:

- Sink Side Bubbler Units in Classroom 109 (01DW003), Classroom 101 (01DW007), Classroom 102 (01DW009), Classroom 202 (02DW023), Classroom 103 (01DW011), Classroom 203 (02DW025), Classroom 106 (01DW015), Classroom 107 (01DW017), and Classroom 209 (02DW037)
- Chrome Plated Brass Base Faucets in Classroom 101 (01CF008), Classroom 201 (02CF021), Classroom 103 (01CF012), Classroom 203 (02CF024), Classroom 204 (02CF026), Classroom 205 (02CF028), and Classroom 107 (01CF018)
- Delta 400 Model Faucet in Out Building Unit 2 (04KC044)

Replacement of these fixtures with lead free materials is also recommended.

The remaining eight outlets showed sample results of 15 parts per billion or less, requiring no further action or additional recommendations. These faucets/fountains include:

- Sink Faucets in Classroom 102 (01CF010) and the Clinic (01CF006)
- Kitchen Faucets in the Community Room Kitchen (01KC005), Classroom 206 (02CF030), Out Building Unit 1 (03KC040 and 03KC041)
- Water Coolers in Out Building Unit 1 (03DW038 and 03DW039)

## Consecutive Sampling Results and Building Plumbing Recommendations

The consecutive samples taken on October 31, 2015, at three sites in the main school building and one site from each of the two out building units all provide additional confirmation that the highest contribution of lead appears to be from the individual faucet/fountains and not from the larger diameter supply plumbing within the main school building or the two out building units. Results of the consecutive sample monitoring are listed in the table below.

Consecutive Sample No.	1	2	3	4	5	6	7	8	9	10
LOCATION	LEAD RESULT (PARTS PER BILLION: ND = NOT-DETECTED)									
Classroom 109 Sink Faucet (01CF004)	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Classroom 102 Sink Faucet (01CF010)	2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Classroom 209 Sink Faucet (02CF036)	3	1	1	1	ND	ND	ND	ND	ND	ND
Out Building Unit 1 Kitchen Faucet (03KC040)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Out Building Unit 2 Kitchen Faucet (04KC044)	2	ND	ND	ND	ND	ND	1	1	ND	ND

## Outlets With Copper Levels Greater Than 1.3 Parts per Million

The DEQ recommends school facilities take action if samples from any drinking water outlets show copper levels greater than 1.3 parts per million. Based on the sampling conducted at 43 faucets/fountains on October 31, 2015, the following two drinking water outlets both located in Outbuilding Unit 1, had copper water level results greater than 1.3 parts per million. These two outlets are listed below with their sample results. While the remaining two outlets in Outbuilding Unit 1 had satisfactory copper results, copper results from all four outlets in Outbuilding Unit 1, along with the consecutive sample results for Outbuilding Unit 1, suggests that copper leaching is occurring in the building plumbing and copper service line due to excessive stagnation and lack of use. Additional work with the school will be performed by the DEQ to address this issue.

### Outlet: Kitchen Faucet, Left (03KC041)

Location: Outbuilding Unit 1, Proposed Preschool

Results: P1=0.33 parts per million, P2=1.84 parts per million  
F01=1.07 parts per million, F02=1.12 parts per million



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### Outlet: Water Cooler, Left (03DW038)

Location: Outbuilding Unit 1, Proposed Preschool

Results: P1=2.77 parts per million, P2=1.37 parts per million  
F01=1.2 parts per million, F02=1.03 parts per million



## Devereaux, Tracy Jo (DEQ)

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, August 25, 2015 1:56 PM  
**To:** lwalters313@gmail.com  
**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Follow Up from our Aug. 4th meeting

Dear Ms. Walters,

I wanted to update you regarding our Department's findings related to questions raised during our meeting at the Governor's office on August 4. I apologize for the delay in getting back to you.

### Lead and Copper Monitoring

Regarding Flint lead and copper compliance monitoring for the January – June 2015 period, the City has confirmed that all lead and copper samples collected throughout the City, whether routine sites or customer requests, were sent to the State of Michigan lab for analysis. Individual sample results are provided to the property owner within 30 days of receiving the lab results in accordance with the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 410(5)). Results from the State of Michigan lab are provided directly to our Office.

Staff have confirmed that the lead 90<sup>th</sup> percentile compliance calculation of 11 parts per billion is based on 69 samples that met the appropriate sampling location site criteria, and met the sample collection site and collection protocol requirements of the Safe Drinking Water Act for this monitoring period. A minimum of 60 samples were required for this monitoring period. As indicated during the meeting, the City's sampling for lead complies with the Action Level standard of 15 parts per billion, but based on the population served by the City and these results, the City will need to make a recommendation to the MDEQ on how they will fully optimize their corrosion control treatment. These next steps continue to follow the requirements of the Lead and Copper Rule.

Samples collected at your residence of 212 Browning Avenue were not included this compliance determination as you utilize a whole home filter. As stated in the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 710a, Lead and Copper in tap water; monitoring requirements) "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment alters the water chemistry and water quality such that it is no longer representative of public water from the City's distribution system. Therefore, the City cannot use samples collected at your residence as part of its determination for public water system compliance with the lead or copper action level standard.

### Sample Summary (samples taken at your residence)

For your information, we are providing the information that we've gathered regarding samples collected at your home. Our records indicate between February and June of this year there were six samples collected by either you or Mr. Mike Glasgow with the City of Flint, and submitted to the State Laboratory for analysis as follows:

February 11, Bathroom tap, collected at 10:20 AM by Mike Glasgow. This sample was analyzed for aesthetic metals (copper, iron, manganese, and zinc) which does not include lead analysis.

February 18, Kitchen tap, collected at 7:15 AM by you. This sample was analyzed for lead (104 parts per billion) and copper (non-detect).

February 25, Kitchen tap, collected at 10:26 AM by Mike Glasgow. This sample was analyzed for metals including lead. All results (including lead) were non-detect except for Barium 0.01 parts per million. The result for Barium was well below its maximum contaminant level of 2 parts per million.

March 3, Kitchen tap, collected at 6:00 AM by you. This sample was analyzed for lead (397 parts per billion) and copper (non-detect).

March 18, Kitchen tap, collected at 11:10 AM by Mike Glasgow. This sample was analyzed for lead (4 parts per billion) and copper (non-detect).

April 2, Pre-point of service, collected at 8:00 AM by you. This sample was analyzed for lead (707 parts per billion) and copper (110 parts per billion).

#### Lead Education/Outreach

As we discussed during the meeting, we support efforts to educate homeowners about the sources of lead in their private residence, provide guidance measures to reduce the potential for lead exposure, and provide information on resources for lead abatement. Along those lines, our Office has been in contact with the Department of Health and Human Services, Environmental Health Division, Healthy Homes Section and had some preliminary discussions about a public education and assistance campaign regarding household lead issues, guidance and abatement.

Lead monitoring by public water systems serves a dual purpose. The first purpose is to ensure the public water supply is adequately treating its water to address corrosion potential and help limit lead exposure. The second purpose is to inform homeowners about lead levels within their individual residence so that they can make educated choices regarding their own exposure risk.

#### pH Results

During the meeting concerns were also expressed regarding pH levels within customer plumbing systems. As you may know, pH has no associated contaminant level as it is simply a numeric scale used to specify the acidity or alkalinity of a solution. The City of Flint conducts daily monitoring of pH values on both its raw and finished (treated) water at the City's water treatment plant as part of its operations. The City is also required to conduct water quality parameter monitoring in the distribution system, which includes pH. Samples are analyzed in accordance with Standard Methods using properly calibrated analytical equipment. Results for pH from these samples are summarized below.

Since late April 2014 – June 2015, the following pH conditions were reported:

Water Treatment Plant – Finished Water plant tap pH range = 7.07 minimum to 9.9 maximum, overall average 7.7, measured daily. We believe the 9.9 is a one-time anomaly from softening treatment.

Distribution System – Water Quality Parameters taken from 25 sample sites located throughout and monitored quarterly

July – Sept. 2014: pH 7.71 average, range 7.56 – 7.86

Oct. – Dec. 2014: pH 7.88 average, range 7.62 – 8.10

Jan. – March 2015: pH 7.81 average, range 7.60 – 7.99

April – June 2015: pH 7.63 Average, range 7.48 – 7.80

In addition, the City's treated water contains alkalinity, which is a measurement of the buffering capacity of water to resist a change in pH. As you can see from the water quality parameter monitoring results above there has been very little change in pH within the City's distribution system. The pH levels described within customer site piping or premise plumbing systems are believed to be the result of onsite treatment and not representative of water quality shown to be occurring in the public water supply system.

## Consumer Confidence Report

Finally, there was confusion during the meeting regarding the City's annual water quality report, the Consumer Confidence Report which we have since been able to clarify.

The City of Flint issued two separate Consumer Confidence Reports (CCR's) in 2015 covering the water quality data from 2014. One report was for the period of January – April 2014 when the City was obtaining water from Detroit (DWSD). And a second report was for the period April – December 2014 when the City was using the Flint River and its own Water Treatment Plant.

The CCR for DWSD water was mailed to customers in June. The Flint River based CCR was mailed to customers in mid-July, delayed due to issues with the printing contractor. We agree that having two separate reports caused confusion. We are working with the City to ensure both reports are posted to the City's website and both are made available when requested by customers. Should the City choose to create separate CCR's during the year that the City of Flint connects to the Karegnondi Water Authority we will work with the City to provide more clarity and try to have all material included in a single mailing.

The DWSD based CCR is the one community members had at the meeting, while the DEQ brought a copy of the Flint River based CCR. As separate and distinct sampling was done under each source, this explains the discrepancy in the values and monitoring periods being reported in the respective CCR's.

We appreciate your interest in these matters and hope this has addressed many of the questions brought up during our meeting. I would like to provide this information to both Dr. Sullivan and Ms. Mayes, but I do not have their contact information. I'm hoping you can share this with them and any others that may be interested.

Sincerely,

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

FLT - in  
case you did  
not see.



# Genesee County Board of Commissioners

1101 BEACH STREET ROOM 312 FLINT MICHIGAN 48602

TELEPHONE: (810) 257-3020

FAX: (810) 257-3008

September 29, 2015

## Public Health Advisory for People Using the Flint City Water Supply with the Flint River as the Source

Lead is a powerful neurotoxin, which means exposure to lead can damage the brain. It can also injure other soft tissues and organs; interfere with the formation of blood, and exposure to enough lead can be fatal. Both children and adults are vulnerable to lead's health effects.

### Common Health Effects on Children:

- Brain damage resulting in IQ loss, learning disabilities, hyperactivity, inability to concentrate, and/or behavior problems
- Stunted growth
- Hearing problems

### Common Health Effects on Adults:

- Hypertension
- Anemia
- Reduced sperm count
- Increased risk of miscarriages

Young children are most vulnerable to lead's effects because prior to age six, their brain and central nervous system are still forming and easily susceptible to damage. For an adult to suffer significant health effects, exposure to lead would have to be sustained and more intense. Most adults who are affected by lead have been exposed in an occupational setting, such as working as a house painter or in a battery recycling plant.

Pregnant women are at special risk because the lead they absorb crosses the placenta and enters the fetus.

It's important to remember that there is no known safe level of lead in a human body. Experts now use a reference level of 5 micrograms per deciliter to identify children with blood lead levels that are much higher than most children's levels. This new level is based on the U.S. population of children ages 1-5 years who are in the highest 2.5% of children when tested for lead in their blood.

COMMISSIONERS:

BRADY GOLDEN

SHREDA CLACK

JAMIE W. CURTIS

JOHN NORTHROP

MARK YOLAND

TONY BROWN

MICHAEL LYNN



Lead in water can contribute to a child's blood lead level. The Michigan Department of Environmental Quality, which regulates municipal water supplies, has assured us that the water leaving the Flint Water Plant meets all Federal and state requirements. The City of Flint has a documented problem with lead in its drinking water due to service and household lines that may contain lead or lead solder which can leach lead because of the corrosivity of the water since changing to the Flint River as the source supply. Generally, those who are most vulnerable to lead's health effects from exposure to unfiltered tap water are the very youngest children. For this reason, if you are not sure about the lead content in your tap water, it's best to either use a filter that has been found to be effective for reducing or eliminating lead, or to use bottled water instead. Water filters should be National Sanitation Foundation (NSF) certified to remove lead and meet ANSI standard 53. If these options are not available to you, then it's best to let the water run for at least five minutes before using it for either drinking or cooking purposes. Always use cold water instead of hot water for drinking and cooking.

It's best to avoid using tap water for mixing infant formula unless you can assure your water is lead free.

#### **Other Exposure:**

When leaded gasoline was in widespread use in this country, the lead came out the tail pipe and was deposited in yards near the roads. That lead may still be in those yards. In addition, lead paint continues to be a major source of childhood lead poisoning and can be found in homes built before 1978 when lead paint was banned in the U.S. and may be a hazard inside and outside the home especially where paint is worn or flaking.

There are many other potential sources of lead exposure, including:

- "Home remedies" and cosmetics imported from other countries
- Tamarind or chili-based candies from Mexico
- Stained glass windows
- Fishing sinkers
- Firing ranges
- Old deteriorated hunt blinds
- Bean pots and painted ceramics
- Crystal decanters
- Lead crystal glassware

Since no safe level has been identified it is in everyone's interest to reduce exposure to lead as much as possible. Recommendations on ways to reduce lead exposure can be found on the Genesee County Health Department website [www.gchd.us](http://www.gchd.us) and Center for Disease Control and Prevention website.

Recent data provided by Hurley Hospital researchers has indicated that a significant increase in blood lead levels has occurred in children since the switch to Flint River water. The county Health Officer has requested that the Michigan Department of Health and Human Services (MDHHS) provide to the County specific data to support its claim that state data is more comprehensive and does not show a significant increase. To date, the MDHHS has failed to confirm the geographic area included in their findings. We want to assure the state data is specific to the boundaries of the City of Flint, and not Flint addresses which would include addresses in areas outside of the City of Flint. These areas, such as Flint Township, that obtain their water from the Detroit Water Authority and would, therefore, not be representative of Flint River water as the water source. The County is prepared to take further action if the State fails to provide the requested data by September 30, 2015. Further action could include a request for outside independent evaluation of the data and to declare a Public Health Emergency in Flint.

COUNTY OF GENESEE

BY:  Date: 9-22-15

Jamie Curtis, Chairperson  
Board of Commissioners

GENESEE COUNTY HEALTH DEPARTMENT

BY:  Date: 9-29-15

Mark Valasek, M.P.H.  
Health Officer



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

September 16, 2015

VIA E-MAIL

The Honorable Daniel Kildee  
United States House of Representatives  
Washington, DC 20515

Dear Congressman Kildee:

Thank you for your September 9, 2015, letter regarding your concerns for the drinking water in the city of Flint (Flint). The Michigan Department of Environmental Quality (MDEQ) is working closely with Flint's water department as well as the U.S. Environmental Protection Agency (USEPA) to ensure Flint residents have ample water that meets state and federal drinking water standards.

The MDEQ's role is to administer its nearly 40-year-old state drinking water protection program based on federal guidelines. The MDEQ works with approximately 11,500 public water systems in the state to monitor for more than 90 primary drinking water contaminants and ensure that every supply consistently provides safe drinking water.

In Flint, the city made a decision 18 months ago to switch drinking water sources. This change required them to take specific measures under the federal Lead and Copper Rule, which was enacted in 1991 to monitor water as it interacts with lead service connections and home plumbing. Flint's test results were conducted according to the same testing protocols every Michigan community uses and the same protocols Flint has used to test its water every three years for the past 25 years.

While the results from Flint's testing show compliance with the federal action level for lead and copper, on August 17, 2015, the MDEQ instructed the city to move forward expeditiously with developing additional corrosion control treatment to minimize the corrosive effects between drinking water and lead service connections and home plumbing in the Flint service area.

We appreciate and share your concern for the situation, and the MDEQ looks forward to providing you a detailed briefing next week. If you have any additional questions in the meantime, please contact Ms. Maggie Pallone, Deputy Director, Policy and Legislative Affairs, at 517-284-6704 or [pallonem@michigan.gov](mailto:pallonem@michigan.gov); or you may contact me.

Sincerely,

Dan Wyant  
Director  
517-284-6700

The Honorable Daniel Kildee

Page 2

September 16, 2015

cc: Senator Jim Ananich  
Representative Sheldon Neeley  
Representative Phil Phelps  
Mayor Dayne Walling, City of Flint  
Mr. Howard Croft, City of Flint  
Dr. Susan Hedman, Regional Administrator, USEPA, Region 5  
Mr. Thomas Poy, USEPA, Region 5  
Ms. Denise Fortin, USEPA, Region 5  
Mr. Michael Schock, USEPA  
Mr. Darren Lytle, USEPA  
Mr. Marc Edwards, Virginia Tech  
Mr. Harvey Hollins, Governor's Southeast Michigan Office  
Mr. Bill McBride, Governor's Washington Office  
Mr. Eric Brown, Governor's Washington Office  
Mr. Jim Sygo, Chief Deputy Director, MDEQ  
Ms. Madhu R. Anderson, Deputy Director, MDEQ  
Ms. Maggie Pallone, Deputy Director, MDEQ  
Ms. Sarah M. Howes, Legislative Liaison, MDEQ  
Mr. Brad Wurfel, Communications Director, MDEQ  
Ms. Liane Shekter Smith, MDEQ  
Mr. Stephen Busch, MDEQ  
Mr. Pat Cook, MDEQ

**Thelen, Mary Beth (DEQ)**

---

**From:** DEQ-Legislative-Contact  
**Sent:** Wednesday, September 16, 2015 5:06 PM  
**To:** Jordan.Dickinson@mail.house.gov  
**Cc:** Ananich, Senator Jim ; Neeley, Rep Sheldon; Phelps, Rep Phil; dwalling@cityofflint.com; hcroft@cityofflint.com; hedman.susan@epa.gov; poy.thomas@epa.gov; Schock.michael@epa.gov; Lytle.darren@epa.gov; fortin.denise@epa.gov; Edwardsm@vt.edu; Hollins, Harvey (GOV); McBride, Bill (GOV); Brown, Eric (GOV); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Anderson, Madhu (DEQ); Copen, Leigh (DEQ); Pallone, Maggie (DEQ); Howes, Sarah (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ)  
**Subject:** MDEQ Response to Congressman Kildee Letter re: Flint Drinking Water  
**Attachments:** Congressman Kildee Response re Flint Water.pdf

Attached please find the MDEQ's response to your September 9, 2015 letter regarding Flint drinking water.

Thank you,  
Heather Feuerstein  
Management Assistant to  
Maggie Pallone, Deputy Director and  
Brad Wurfel, Communications Director  
Department of Environmental Quality  
517.284.6715

# Letter Buckslip

10-Sep-15

ID:	LEG00186	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office _____ Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ <input type="checkbox"/> Delegated
Date of letter:	9/9/2015	
Date received:	9/9/2015	
Date due:	9/21/2015	
Reply date:		
Last name:	Kildee	
First name:	Dan	
Organization:	United States Representative	
Subject:	Water quality issues in the city of Flint	
Reply to:		
Author:		
Owner:	SHALERK	

<u>Action</u>	<u>Action Date</u>	<u>Due Date</u>	<u>Entity</u>	<u>Signature</u>	<u>Owner</u>	<u>CCs</u>
Assigned 1	9/10/2015	9/21/2015	ODWM A	DIR	SHALERK	Thelen Sygo/Shaler Maggie Pallone Brad Wurfel DEQ-Legis-Contact Liane Shekter Smith Richard Benzie Steve Busch

Comments: Assigned to ODWMA

Note: Maggie Pallone will run the Director's response by Eric Brown, Governor's Washington office, for his approval before the Director signs.

Original to Shaler (T.F.)

LEG00186

**Shaler, Karen (DEQ)**

---

From: "Dickinson, Jordan" <[Jordan.Dickinson@mail.house.gov](mailto:Jordan.Dickinson@mail.house.gov)>  
Date: September 9, 2015 at 6:54:47 PM EDT  
To: "[Wurfelb@michigan.gov](mailto:Wurfelb@michigan.gov)" <[Wurfelb@michigan.gov](mailto:Wurfelb@michigan.gov)>  
Subject: FW: Congressman Kildee Letter on Lead in Flint Water

Hi Brad,

Can you please make sure the attached letter is passed along to Director Wyant? I will forward along a physical copy in the mail.

Thank you,

**Jordan Dickinson**  
Legislative Assistant  
Congressman Dan Kildee (MI-05)  
227 Cannon House Office Building  
Washington, D.C. 20515  
Phone: (202) 225-3611  
[www.dankildee.house.gov](http://www.dankildee.house.gov)

DANIEL T. KILDEE  
5TH DISTRICT, MICHIGAN

COMMITTEE ON  
FINANCIAL SERVICES

SUBCOMMITTEE ON  
HOUSING AND INSURANCE

SUBCOMMITTEE ON  
MONETARY POLICY AND TRADE

SENIOR WRP

DEMOCRATIC POLICY AND  
COMMUNICATIONS COMMITTEE



Congress of the United States  
House of Representatives  
Washington, DC 20515  
September 9, 2015

WASHINGTON OFFICE

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DISTRICT OFFICE

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RepDANKILDEE

@RepDANKILDEE

Ms. Gina McCarthy  
Administrator  
Environmental Protection Agency  
1200 Pennsylvania Ave. NW  
Washington, D.C. 20460

Mr. Dan Wyant  
Director  
Michigan Department of Environmental Quality  
P.O. Box 30473  
Lansing, MI 48909

Administrator McCarthy and Director Wyant:

The attached June 24, 2015, memorandum between two Environmental Protection Agency (EPA) employees, Miguel A. Del Toral and Thomas Poy, published recently by the American Civil Liberties Union of Michigan, suggests that there are high lead levels in the city of Flint, Mich., water transmission lines. Furthermore, this document reflects that children consuming this water had levels of lead in their blood in excess of three times what they were prior to the city of Flint switching its source water from the Detroit Water and Sewage Department (DWSD) to the Flint River.

In addition, this memorandum makes recommendations to Mr. Poy, Chief of the Ground Water and Drinking Water Branch of EPA Region 5, to do three things. First, for the EPA to work with the Michigan Department of Environmental Quality (MDEQ) to provide technical assistance to the city of Flint to deal with water quality issues. Second, it suggests the EPA review the compliance status of the city of Flint in respect to its compliance with the Lead and Copper Rule (LCR). Third, the memorandum recommends that the EPA conduct a review of the city of Flint testing procedures to ensure they are compliant with the LCR.

Regarding this memorandum and the surrounding water quality issues in the city of Flint, I have the following questions:

- Was this memorandum actually sent to Mr. Poy?



- Are the findings in the memorandum regarding the lead levels in the city of Flint water accurate?
- If there were in fact high levels of lead in the water in the city of Flint, when did the EPA and/or MDEQ plan to alert the public?
- What, if any, of the recommendations has the EPA followed from the memorandum?
- Given the demonstrated level of lead in the water in Flint, MI, is the water safe?

Regardless, I am very troubled by recent tests suggesting high levels of lead in the city of Flint's water system. As you know, on the EPA's website it says that lead above the "action level" in drinking water can cause a variety of adverse health effects, including delays in physical and mental development in babies and children.

According to the Safe Drinking Water Act, the EPA has the responsibility of enforcing water quality standards. EPA, however, has given the primary responsibility of enforcing water quality standards to the state of Michigan via MDEQ. As such, it is the responsibility of these agencies to ensure that the people of the city of Flint have safe drinking water.

Thank you and I look forward to hearing from you soon.

Sincerely,



Dan Kildee  
MEMBER OF CONGRESS

cc:

State Senator Jim Ananich  
State Representative Sheldon Neeley  
State Representative Phil Phelps  
Mayor Dayne Walling, City of Flint  
Howard Croft, City of Flint  
Susan Hedman, EPA  
Thomas Poy, EPA  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD  
Denise Fortin, EPA  
Liane Shekter-Smith, MDEQ  
Pat Cook, MDEQ  
Stephen Busch, MDEQ  
Brad Wurfel, MDEQ  
Marc Edwards, Virginia Tech



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

WG-15J

June 24, 2015

MEMORANDUM

SUBJECT: High Lead Levels in Flint, Michigan – Interim Report

FROM: Miguel A. Del Toral *[Signature]*  
Regulations Manager, Ground Water and Drinking Water Branch

TO: Thomas Poy  
Chief, Ground Water and Drinking Water Branch

The purpose of this interim report is to summarize the available information regarding activities conducted to date in response to high lead levels in drinking water reported by a resident in the City of Flint, Michigan. The final report will be submitted once additional analyses have been completed on pipe and water samples.

Following a change in the water source, the City of Flint has experienced a number of water quality issues resulting in violations of National Primary Drinking Water Regulations (NPDWR) including acute and non-acute Coliform Maximum Contaminant Level (MCL) violations and Total Trihalomethanes (TTHM) MCL violations as follows:

Acute Coliform MCL violation in August 2014  
Monthly Coliform MCL violation in August 2014  
Monthly Coliform MCL violation in September 2014  
Average TTHM MCL violation in December 2014  
Average TTHM MCL violation in June 2015

In addition, as of April 30, 2014, when the City of Flint switched from purchasing finished water from the City of Detroit to using the Flint River as their new water source, the City of Flint is no longer providing corrosion control treatment for lead and copper.

A major concern from a public health standpoint is the absence of corrosion control treatment in the City of Flint for mitigating lead and copper levels in the drinking water. Recent drinking water sample results indicate the presence of high lead results

in the drinking water, which is to be expected in a public water system that is not providing corrosion control treatment. The lack of any mitigating treatment for lead is of serious concern for residents that live in homes with lead service lines or partial lead service lines, which are common throughout the City of Flint.

In addition, following the switch to using the Flint River, the City of Flint began adding ferric chloride, a coagulant used to improve the removal of organic matter, as part of the strategy to reduce the TTHM levels. Studies have shown that an increase in the chloride-to-sulfate mass ratio in the water can adversely affect lead levels by increasing the galvanic corrosion of lead in the plumbing network.

Prior to April 30, 2014, the City of Flint purchased finished water from the City of Detroit which contained orthophosphate, a treatment chemical used to control lead and copper levels in the drinking water. When the City of Flint switched to the Flint River as their water source on April 30, 2014, the orthophosphate treatment for lead and copper control was not continued. In effect, the City of Flint stopped providing treatment used to mitigate lead and copper levels in the water. In accordance with the Lead and Copper Rule (LCR), all large systems (serving greater than 50,000 persons) are required to install and maintain corrosion control treatment for lead and copper. In the absence of any corrosion control treatment, lead levels in drinking water can be expected to increase.

The lack of mitigating treatment is especially concerning as the high lead levels will likely not be reflected in the City of Flint's compliance samples due to the sampling procedures used by the City of Flint for collecting compliance samples. The instructions from the City of Flint to residents direct the residents to 'pre-flush' the taps prior to collecting the compliance samples. A copy of the instructions provided by the City of Flint to residents will be included in the final report.

The practice of pre-flushing before collecting compliance samples has been shown to result in the minimization of lead capture and significant underestimation of lead levels in the drinking water. Although this practice is not specifically prohibited by the LCR, it negates the intent of the rule to collect compliance samples under 'worst-case' conditions, which is necessary for statistical validity given the small number of samples collected for lead and copper under the LCR. This is a serious concern as the compliance sampling results which are reported by the City of Flint to residents could provide a false sense of security to the residents of Flint regarding lead levels in the water and may result in residents not taking necessary precautions to protect their families from lead in the drinking water. Our concern regarding the inclusion of 'pre-flushing' in sampling instructions used by public water systems in Michigan has been raised with the Michigan Department of Environmental Quality (MDEQ). The MDEQ has indicated that this practice is not prohibited by the LCR and continues to retain the 'pre-flushing' recommendation in their lead compliance sampling guidance to public water systems in Michigan. A copy of the MDEQ guidance will be included in the final report.

In the case of the Flint resident that contacted U.S. EPA (Ms. Lee-Anne Walters), the initial results from drinking water samples collected by the City of Flint in her home

for lead were 104 ug/L and 397 ug/L. The level of iron in the water also exceeded the capability of the measurement ( $>3.3$  mg/L). The lead results were especially alarming given that the samples were collected using the sampling procedures described above, which minimize the capture of lead. When contacted by U.S. EPA Region 5, the MDEQ indicated that the lead was coming from the Walters' plumbing. Ms. Walters had previously indicated that all of the plumbing in the home was plastic.

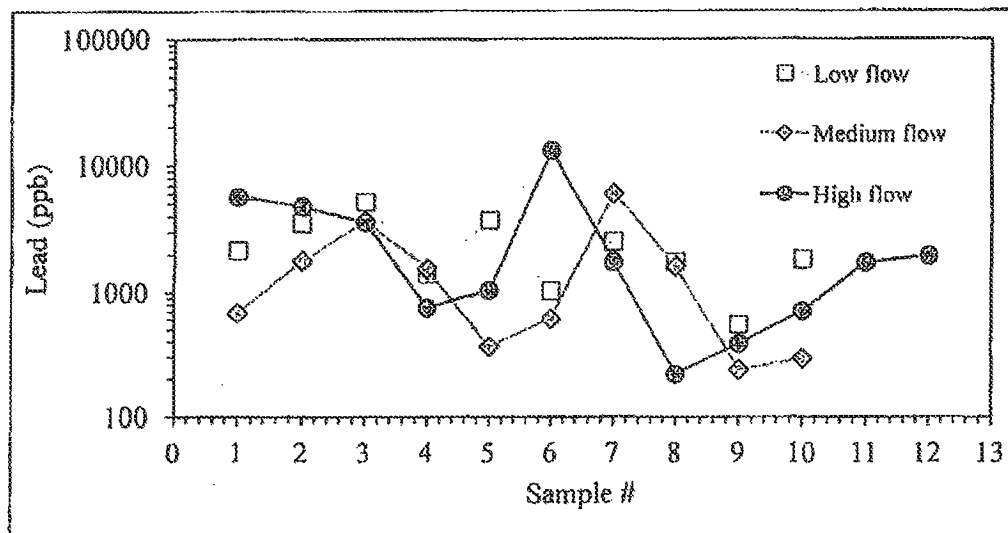
Following the confirmation of the initial high lead results, U.S. EPA Region 5 conducted two visits to the Walters' home on April 27, 2015 and May 6, 2015. Based on an inspection of the plumbing and subsequent sampling conducted at the Walters' residence, it was determined that except for a few minor metallic connectors, all interior plumbing, including the pipes, valves and connectors are made of plastic certified by the National Sanitation Foundation (NSF) for use in drinking water applications. Subsequent sampling showed that the faucets in the home appear to be compliant with the new lead-free requirements and are also not the source for the high lead levels. Our inspection of the interior plumbing and analysis of follow-up sampling results demonstrate that the home plumbing network is not the source of the high lead levels found at the Walters' residence. The photographs and all sampling results will be included in the final report.

Based on the U.S. EPA inspection and documentation of the plastic plumbing at the Walters' residence, it was suspected that the high lead was being introduced into the Walters' home plumbing from outside the home, likely from a lead service line. Three portions of the service line were extracted during a subsequent trip on May 6, 2015 and sent for analysis, when the Walters' service line was replaced. Analyses performed to date indicate that a portion of the service line is made of galvanized iron pipe. Inspection of the remaining portion from the water main to the external shut-off valve confirmed that the portion from the water main to the external shut-off valve is a lead service line.

Ms. Walters has also provided U.S. EPA with medical reports on her child's blood lead testing indicating that the child had a low blood lead level (2 ug/dL) prior to the source water switch and an elevated blood lead level following the switch (6.5 ug/dL). Redacted copies of these reports will also be included in the final report.

Subsequent to the discovery of high lead levels in the Walters' drinking water, the water to the Walters' home was shut off on April 3, 2015. The water was briefly turned back on to collect additional samples on April 28, 2015. Since the water had stagnated for an extended period of time, the kitchen tap was flushed for 25 minutes the night before collecting the samples. Three sets of samples were collected at different flow rates (10 at low flow, 10 at medium flow and 10 at high flow).

The drinking water samples collected from the Walters' residence on April 28, 2015 contained extremely high lead levels, ranging in value from 200 ug/L to 13,200 ug/L (see below).



*Sample results and graph are provided courtesy of Virginia Tech*

Additional sample results from resident-requested samples have also shown lead levels in excess of the lead action level. As with the samples collected by the City of Flint for compliance, the resident-requested samples are also being collected using the 'pre-flushing', so the lead levels captured in these samples likely do not represent the worst-case lead levels in the water and the actual lead levels at these homes may be much higher.

Pending completion of the final report, my interim recommendations are as follows:

1. The U.S. EPA should follow up with the MDEQ and the City of Flint on the recommendation made by U.S. EPA to MDEQ on June 10, 2015 to offer the City of Flint technical assistance on managing the different water quality issues in Flint, including lead in the drinking water. Although there have been two written assessments regarding water quality and operational issues in Flint at the time of this report, they do not address lead in drinking water. The first is an Operational Evaluation Report (OER) produced in November 2014 by Lockwood, Andrews and Newnam, Inc. to assess the factors contributing to high Total Trihalomethane (TTHM) levels in Flint following the source change. The focus of this report is to identify potential causes and remedial actions for lowering TTHM levels. The second report (Water Quality Report) produced by Veolia for the City of Flint on March 12, 2015, is an assessment of Flint's water quality and operations which provides advice to the City of Flint primarily focused on TTHM control and other operational issues. Both reports were written prior to the recent discovery of high lead results in Flint drinking water. As such, the reports do not take into account the potential effects on lead levels in drinking water.

As previously mentioned, the City of Flint currently has no mitigating treatment for lead and is also planning another source water change in the near future. U.S. EPA's Office of Research and Development in Cincinnati has extensive experience in corrosion and corrosion control treatment and distribution system issues and would be a valuable addition to the drinking water advisory group for the City of Flint. Copies of the qualifications and experience for Michael Schock and Darren Lytle have been forwarded to MDEQ.

2. U.S. EPA should review the compliance status of the City of Flint with respect to whether the system is in violation of the LCR requirement to install and maintain optimal corrosion control and whether the MDEQ is properly implementing the LCR provisions regarding optimal corrosion control treatment requirements for large systems. Pursuant to 40 CFR Section 141.82(i), the EPA Regional Administrator may review treatment determinations made by a State and issue federal treatment determinations consistent with the requirements of the LCR where the Regional Administrator finds: (1) A state has failed to issue a treatment determination by the applicable deadlines; (2) A State has abused its discretion in a substantial number of cases or in cases affecting a substantial population; or (3) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.
3. The U.S. EPA should review whether relevant resident-requested samples are being included by the City of Flint in calculating the 90<sup>th</sup> percentile compliance value for lead. Recent drinking water tests conducted at homes in Flint for lead that are not part of the compliance sampling pool have revealed high lead levels in the drinking water. The U.S. EPA memorandum signed on December 23, 2004 provides clarification on compliance determinations and states that customer-requested samples are to be included in the 90<sup>th</sup> percentile lead compliance calculation where the sampling is conducted during the monitoring period from sites and sampling procedures meeting the LCR criteria. Given the prevalence of lead service lines in the City of Flint, should these sample results be from homes with lead service lines, the sample results would be considered compliance samples under the LCR.

Also attached is a timeline of events for Flint, Michigan. Should you have any questions regarding the information or recommendations provided, please let me know.

cc: Liane Shekter-Smith (MDEQ)  
Pat Cook (MDEQ)  
Stephen Busch (MDEQ)  
Michael Prysby (MDEQ)  
Marc Edwards (Virginia Tech)  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD

**Thelen, Mary Beth (DEQ)**

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**From:** Muchmore, Dennis (GOV)  
**Sent:** Monday, September 28, 2015 12:05 PM  
**To:** McBride, Bill (GOV); Hollins, Harvey (GOV); Agen, Jarrod (GOV); Wurfel, Sara (GOV); Lyon, Nick (DCH); Wyant, Dan (DEQ)  
**Subject:** FW: Letter to Governor Snyder: Flint Water  
**Attachments:** 09.28.2015-Letter-Ananich-Snyder-Water-Requests.pdf

Just came in

**From:** Andrew Leavitt [<mailto:ALEavitt@senate.michigan.gov>]  
**Sent:** Monday, September 28, 2015 11:45 AM  
**To:** Muchmore, Dennis (GOV) <[muchmored@michigan.gov](mailto:muchmored@michigan.gov)>  
**Subject:** Letter to Governor Snyder: Flint Water

Hi Dennis,

Senator Ananich began drafting the attached letter on Sunday and thought it would be helpful to guide our 12pm call.

Thanks,

Andy

SENATE MINORITY LEADER  
**JIM ANANICH**

☎ 517.373.0142  
✉ [senjananich@senate.michigan.gov](mailto:senjananich@senate.michigan.gov)  
🌐 [senatedems.com/vananich](http://senatedems.com/vananich)

September 28, 2015

State of Michigan  
Executive Office of the Governor  
P.O. Box 30013  
Lansing, MI 48909

Governor Snyder,

Access to safe, affordable drinking water is a basic necessity for every community. It is completely unacceptable that respected scientific experts and our trusted local physicians have verified that the City of Flint's drinking water is dangerous for our citizens, especially our most vulnerable young people.

As a result, I am formally requesting assistance as suggested by the experts on the frontline of this public health crisis. Here are the top priorities we should work together to address:

1. **Swift transfer to a safe source of water until the Karegnondi Water Authority (KWA) project is complete next year.** Your administration has the ability to ensure a financially acceptable and responsible contract between Flint and the Detroit Water and Sewerage Department, particularly in light of the public health implications with the Flint River supply.
2. **Equally urgent is the need for corrosion control as recommended by independent scientific experts.** There are chemical treatment additives that could help reduce this corrosion. I urge you to help the city implement anti-corrosion methods immediately. The current emergency makes the January timeline unacceptable.
3. **Filters and bottled water assistance.** Flint water touches the entire city. Whether it's a person's home, work, school, restaurant or place of worship, access to safe, clean drinking water should not be hindered. Water filters, used in conjunction with corrosion control methods, are necessary to help guard against toxic exposure.

I have been working with the philanthropic community and private sector to secure donations to acquire filters and water; however, more funds will be necessary to effectively cover the thousands of residents impacted. I would like to formally request emergency funding to help supplement the acquisition of water filters and bottled water. Any and all appropriate state or federal money to help accomplish this feat should be considered.



SENATE MINORITY LEADER  
**JIM ANANICH**


☎ 517.373.0142  
✉ [senjananich@senate.michigan.gov](mailto:senjananich@senate.michigan.gov)  
🌐 [senatedems.com/vananich](http://senatedems.com/vananich)

4. **Support for completion of the KWA pipeline.** It is presumed that the upcoming KWA pipeline will solve a number of problems associated with the current sourcing of Flint's water from the Flint River. I am requesting a meeting between representatives from your office, KWA board members and project engineers to discuss any options to expedite the pipeline's construction.
5. **A long-term commitment to addressing outdated infrastructure.** A recent EPA report just outlined the billions of dollars necessary over the next several decades to adequately secure safe water for our entire state. You have the position and opportunity to be a national leader on moving the debate forward on this topic so that we can avoid the type of catastrophe my community is grappling with today.

I look forward to working with you to deliver on these concrete and urgent action items to alleviate the public health crisis facing our residents.

We jeopardize any progress and comeback for our cities and state if we cannot ensure safe, basic necessities for our families or if we cannot come together swiftly to fix an identified, severe threat to the safety of our people.

Sincerely,



Jim Ananich  
Senate Democratic Leader  
District 27

cc:

U.S. Representative Dan Kildee  
Mayor Dayne Walling, City of Flint  
Howard Croft, City of Flint  
Susan Hedman, EPA  
Thomas Poy, EPA  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD  
Denise Fortin, EPA  
Liane Shekter-Smith, MDEQ  
Pat Cook, MDEQ  
Stephen Busch, MDEQ  
Brad Wurfel, MDEQ  
Marc Edwards, Virginia Tech

## Thelen, Mary Beth (DEQ)

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**Subject:** RDS/DM/BM/NL/DW/Maggie Pallone/Karen Tommasulo/Col. Etue & Lt. Col. Sands/HH/DMurray/TSaxton - Meeting Re: Flint Water

**Location:** Governor's Conference Room, Romney

**Start:** Tue 9/29/2015 1:00 PM

**End:** Tue 9/29/2015 1:30 PM

**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** GovCalendar

**Required Attendees:** Mcbride, Bill (GOV); Wisniewski, Wendy (GOV); Muchmore, Dennis (GOV); Lyon, Nick (DCH); Grijalva, Nancy (DCH); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Etue, Kriste (MSP); Klotz, Josephine (MSP); Hollins, Harvey (GOV); Clayton, Stacie (GOV); Hansen, Rachel (GOV); Murray, David (GOV); Adamczyk, Lynne (GOV); Sands, Thomas (MSP)

**Optional Attendees:** Clement, Elizabeth (GOV); Agen, Jarrod (GOV)

PPI

HH by Phone

PPI

PPI

Host: PPI - RH to dial in as host

## Thelen, Mary Beth (DEQ)

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**From:** Scott, Allison (GOV)  
**Sent:** Tuesday, September 29, 2015 10:45 AM  
**To:** Muchmore, Dennis (GOV); Clement, Elizabeth (GOV); Agen, Jarrod (GOV); Wyant, Dan (DEQ); Lyon, Nick (DCH); McBride, Bill (GOV)  
**Cc:** Thelen, Mary Beth (DEQ); Grijalva, Nancy (DCH); Wisniewski, Wendy (GOV)  
**Subject:** FLINT WATER - MEETING TODAY  
  
**Importance:** High

You will be receiving a meeting notice from Beth Emmitt for a meeting with the Governor this afternoon. Listed below are areas that we should provide him an update on engagement; if not yet engaged, then we need to engage asap.

1. Emergency management – similar to disasters, is there some form of action we can engage for this situation to help manage
2. Chief Medical officer – should be speaking with Hurley
3. WIC – re water and formula – status update
4. Drain commissioner – how do we expedite KWA

Looking at a 1 pm meeting – let me know if you have questions on the above.

Thanks  
ALS

## **Thelen, Mary Beth (DEQ)**

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**From:** Sygo, Jim (DEQ)  
**Sent:** Thursday, August 06, 2015 12:17 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Cook, Pat (DEQ); Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)  
**Subject:** Re: University of Michigan inquiry re: Flint

Sounds like a good approach.

Sent from my iPhone

On Aug 6, 2015, at 11:52 AM, Shekter Smith, Liane (DEQ) <[SHEKTERL@michigan.gov](mailto:SHEKTERL@michigan.gov)> wrote:

Yesterday, Steve Busch and I participated in a conference call with Professors Lutgarde Raskin and Krista Wigginton (Dept. of Civil and Environmental Engineering) and Prof. Stuart Batterman (School of Public Health) and several of their graduate students.

They wanted to discuss recent events in Flint and are interested in possibly providing sampling, analysis, and education/outreach to address potential lead exposure issues, TTHM issues, possibly microbial activity and/or aesthetic problems. They are aware of the report published on the ACLU website identifying lead as an issue in Flint and were interested in helping to obtain analytical data to determine the potential extent of the problem and to help residents understand what it means for them.

We suggested they begin by having discussions with the City to determine what level of assistance might be helpful to the City.

If this moves forward, we would recommend that DEQ, DHHS staff, LHD staff, and a group of local residents/stakeholders be included in discussions to guide future activities.

Today, Steve provided UM with contacts at the City. UM is interested in quickly arranging a preliminary meeting to flesh out what might happen going forward.

We'll keep you updated if this progresses.

Liane

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

**Olszewski, Rosemarie (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, September 24, 2015 2:21 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Requested MDEQ Drinking Water Information  
**Attachments:** Flint lead-copper history.pdf; 2310FlintCertOpReport2015-09-23.pdf; CWS-LeadServiceLines-List-partial.pdf

Please print.

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, September 24, 2015 2:20 PM  
**To:** [sheldonneeley@house.mi.gov](mailto:sheldonneeley@house.mi.gov)  
**Cc:** [latanyagarrett@house.mi.gov](mailto:latanyagarrett@house.mi.gov); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)  
**Subject:** Requested MDEQ Drinking Water Information

Dear Representative Neeley:

I am writing in response to our meeting at your office on September 22, 2015, discussing the recent concerns by you and your constituents regarding lead levels in their tap water. Your interest in this matter is appreciated. During the meeting you requested additional information which we are providing to you as follows and attached.

1. A summary of all lead and copper compliance samples for the City of Flint is attached (Flint lead-copper history.pdf). This compilation was just completed by DEQ staff based on our records. For easier reading we have color coded the lead sample results. Those in green are 15 parts per billion or less. Those in red are over 15 parts per billion. While the City has indicated difficulty in obtaining and keeping customer participants, you will note as we explained during our meeting that lead results vary both higher and lower for addresses where monitoring has been conducted multiple times. Please note that due to the large volume of data, this document has been formatted to print on 11x17 paper.
2. A list of certified operators for the City of Flint is attached (2310FlintCertOpReport2015-09-23.pdf). This information comes from our operator certification and training database. All operators listed with an "F" certification meet the Administrative Rule requirement for the City of Flint Water Treatment Plant that "A shift operator shall be on site and in charge of each operating shift at a community supply in the F classification when the operator in charge is not on site."
3. A list (partial) of communities in Michigan, mostly from Southeast Michigan, that have reported having at least some lead service lines as part of their historical lead and copper compliance monitoring is attached (CWS-LeadServiceLines-List-partial.pdf). Again, please note that this is a partial list of community water systems statewide, based on the records we have been able to review to date. As noted during our meeting, a complete list, if still desired will take longer to compile.

We hope that this information will meet your needs. If you should have additional questions, please contact me at the number below.

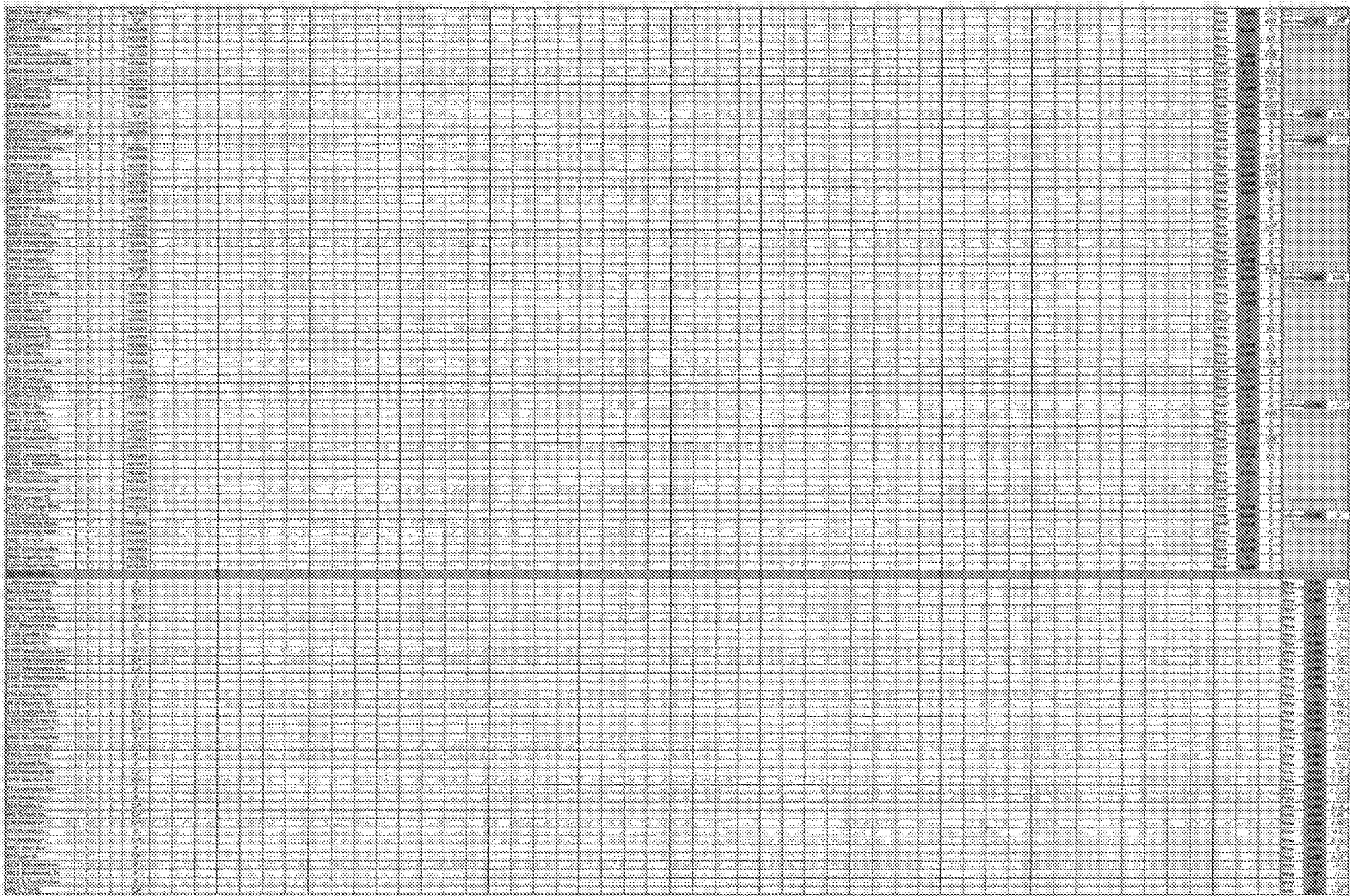
Sincerely,

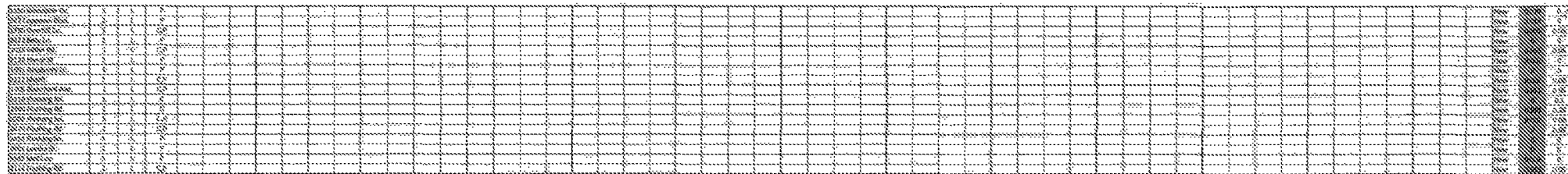
Stephen Busch, P.E.  
MDEQ Lansing District Coordinator  
Office of Drinking Water and Municipal Assistance  
Lansing and Jackson District Supervisor  
517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)



[illegible]







## CEC Report within Renewal Period - By WSSN

WSSN: 2310

DISTRICT: 11

OPERATOR: Nicole D. Alexander

OPER ID: 13291

CERTIFIED: ISSUE DATE: 07/16/2013

EXPIRATION DATE: 07/15/2016

CLASSIFICATION(S) HELD: F-3, S-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
03/06/2014	Chlorine Safety Training Seminar	Flint	0.2		
CEC's Earned:			.2	.0	.0
Total CEC's Earned:			0.2		

OPERATOR: Jessica E. Ashley

OPER ID: 18582

CERTIFIED: ISSUE DATE: 11/05/2014

EXPIRATION DATE: 01/15/2018

CLASSIFICATION(S) HELD: F-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

OPERATOR: Scott A. Ball

OPER ID: 18394

CERTIFIED: ISSUE DATE: 11/05/2014

EXPIRATION DATE: 01/15/2018

CLASSIFICATION(S) HELD: F-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

OPERATOR: Chris S. Beatenhead

OPER ID: 18594

CERTIFIED: ISSUE DATE: 11/05/2014

EXPIRATION DATE: 01/15/2018

CLASSIFICATION(S) HELD: F-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

OPERATOR: Melissa A. Beckelic

OPER ID: 14931

CERTIFIED: ISSUE DATE: 10/17/2012

EXPIRATION DATE: 01/15/2016

CLASSIFICATION(S) HELD: F-2, S-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
08/04/2015	Basic Environmental Chemistry	on line	1.1		
02/04/2015	Joint Expo	Lansing			0.2
06/19/2013	MDEQ Water Security Tabletop Exercises -	Montrose		0.2	
CEC's Earned:			1.1	.2	.2
Total CEC's Earned:			1.5		

OPERATOR: Michael G. Beckley

OPER ID: 13782

CERTIFIED: ISSUE DATE: 06/01/2015

EXPIRATION DATE: 07/15/2018

CLASSIFICATION(S) HELD: F-4, S-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

OPERATOR: Timothy J. Bednarski

OPER ID: 18595

CERTIFIED: ISSUE DATE: 05/06/2015

EXPIRATION DATE: 07/15/2018

CLASSIFICATION(S) HELD: F-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

**OPERATOR:** Robert J. Bincsik**OPER ID:** 13784**CERTIFIED:** ISSUE DATE: 01/16/2014**EXPIRATION DATE:** 01/15/2017**CLASSIFICATION(S) HELD:** F-4, S-1**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
02/04/2015	Joint Expo	Lansing			0.2
02/05/2014	Joint Expo	Lansing			0.2
CEC's Earned:			.0	.0	.4
Total CEC's Earned:			0.4		

**OPERATOR:** Timothy A. Bratton**OPER ID:** 4214**CERTIFIED:** ISSUE DATE: 12/18/2013**EXPIRATION DATE:** 01/15/2017**CLASSIFICATION(S) HELD:** F-4**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
03/06/2014	Chlorine Safety Training Seminar	Flint	0.2		
01/14/2014	Electrical Training: Advanced	Lapeer	0.5		
CEC's Earned:			.7	.0	.0
Total CEC's Earned:			0.7		

**OPERATOR:** Thomas A. Childs**OPER ID:** 12737**CERTIFIED:** ISSUE DATE: 05/06/2015**EXPIRATION DATE:** 07/15/2018**CLASSIFICATION(S) HELD:** F-3**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

**OPERATOR:** Todd C. Church**OPER ID:** 12192**CERTIFIED:** ISSUE DATE: 11/09/2011**EXPIRATION DATE:** 01/15/2015**CLASSIFICATION(S) HELD:** S-4**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
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CEC's Earned: .0 .0 .0  
 Total CEC's Earned: 0.0

OPERATOR: Jeffrey S. Church OPER ID: 12559  
 CERTIFIED: ISSUE DATE: 04/16/2014 EXPIRATION DATE: 04/15/2017  
 CLASSIFICATION(S) HELD: S-3 WSSN: 2310 DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
06/24/2015	NUCA Excavation Safety & Competent	Flint			0.6
CEC's Earned:			.0	.0	.6
Total CEC's Earned:			0.6		

OPERATOR: Scott A. Dungee OPER ID: 5550  
 CERTIFIED: ISSUE DATE: 12/01/2013 EXPIRATION DATE: 01/15/2017  
 CLASSIFICATION(S) HELD: F-4, S-4 WSSN: 2310 DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
02/04/2015	Joint Expo	Lansing			0.2
03/06/2014	Chlorine Safety Training Seminar	Flint	0.2		
CEC's Earned:			.2	.0	.2
Total CEC's Earned:			0.4		

OPERATOR: Donald G. Echlin OPER ID: 17279  
 CERTIFIED: ISSUE DATE: 11/05/2014 EXPIRATION DATE: 01/15/2018  
 CLASSIFICATION(S) HELD: F-3, S-4 WSSN: 2310 DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
02/18/2015	Technical Maintenance for W&WW Treatment	Davison	0.5		
02/04/2015	Joint Expo	Lansing			0.2
CEC's Earned:			.5	.0	.2
Total CEC's Earned:			0.7		

**OPERATOR:** Michael B. Glasgow**OPER ID:** 13684**CERTIFIED:** ISSUE DATE: 01/01/2014**EXPIRATION DATE:** 01/15/2017**CLASSIFICATION(S) HELD:** F-1R, F-2, S-3**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
03/06/2014	Chlorine Safety Training Seminar	Flint	0.2		
	CEC's Earned:		.2	.0	.0
	Total CEC's Earned:	0.2			

**OPERATOR:** Rodney L. Jackson**OPER ID:** 16056**CERTIFIED:** ISSUE DATE: 11/06/2013**EXPIRATION DATE:** 01/15/2017**CLASSIFICATION(S) HELD:** F-3, S-2**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
03/06/2014	Chlorine Safety Training Seminar	Flint	0.2		
	CEC's Earned:		.2	.0	.0
	Total CEC's Earned:	0.2			

**OPERATOR:** Christopher J. Koryciak**OPER ID:** 4653**CERTIFIED:** ISSUE DATE: 12/01/2013**EXPIRATION DATE:** 01/15/2017**CLASSIFICATION(S) HELD:** F-4, S-4**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
03/06/2014	Chlorine Safety Training Seminar	Flint	0.2		
	CEC's Earned:		.2	.0	.0
	Total CEC's Earned:	0.2			

**OPERATOR:** Matt T. McFarland**OPER ID:** 5575**CERTIFIED:** ISSUE DATE: 01/16/2014**EXPIRATION DATE:** 01/15/2017**CLASSIFICATION(S) HELD:** F-3, S-3**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
12/31/2014	AWWA Membership				0.1
	CEC's Earned:		.0	.0	.1
	Total CEC's Earned:	0.1			



**OPERATOR:** Kevin S. McLeod      **OPER ID:** 18598  
**CERTIFIED:** ISSUE DATE: 11/05/2014      EXPIRATION DATE: 01/15/2018  
**CLASSIFICATION(S) HELD:** F-4      **WSSN:** 2310      **DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

**OPERATOR:** John M. Monsees      **OPER ID:** 3622  
**CERTIFIED:** ISSUE DATE: 07/01/2014      EXPIRATION DATE: 07/15/2017  
**CLASSIFICATION(S) HELD:** F-2, S-1      **WSSN:** 2310      **DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
12/31/2014	MRWA Membership				0.1
09/12/2014	MI-AWWA Annual Conference Exhibits	Manistee			0.1
09/12/2014	MI-AWWA Annual Conference Exhibitor	Manistee	0.1		
09/12/2014	MI-AWWA Section Meeting	Manistee	0.6	0.4	0.1
CEC's Earned:			.7	.4	.3
Total CEC's Earned:			1.4		

**OPERATOR:** Jeffrey N. Murray      **OPER ID:** 16103  
**CERTIFIED:** ISSUE DATE: 11/09/2011      EXPIRATION DATE: 01/15/2015  
**CLASSIFICATION(S) HELD:** S-4      **WSSN:** 2310      **DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

OPERATOR: Paul O. Simpson

OPER ID: 4849

CERTIFIED: ISSUE DATE: 01/16/2015

EXPIRATION DATE: 01/15/2018

CLASSIFICATION(S) HELD: S-2

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
06/25/2015	NUCA Excavation Safety & Competent	Flint			0.6
06/11/2015	Confined Space	Flint			0.4
03/20/2015	MRWA Annual Conference	Acme	0.6	0.4	0.1
03/20/2015	Michigan Rural Water Association Annual	Acme			0.1
CEC's Earned:			.6	.4	1.2
Total CEC's Earned:			2.2		

OPERATOR: Howard W. Swickard

OPER ID: 5091

CERTIFIED: ISSUE DATE: 12/16/2012

EXPIRATION DATE: 01/15/2016

CLASSIFICATION(S) HELD: S-2

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
03/20/2015	MRWA Annual Conference	Acme	0.6	0.4	0.1
03/20/2015	Michigan Rural Water Association Annual	Acme			0.1
09/25/2013	Basic Math/Hydraulics	Higgins Lake	1.8		
07/23/2013	Permit Required Confined Space	Flint			0.6
07/10/2013	Arsenic in Drinking Water	Mt Pleasant	0.4		
06/05/2013	NUCA Excavation Safety & Competent	Flint			0.6
05/30/2013	Municipal Safety Day	Mason			0.4
CEC's Earned:			2.8	.4	1.8
Total CEC's Earned:			5.0		

OPERATOR: Bobby G. Vaughn

OPER ID: 14565

CERTIFIED: ISSUE DATE: 02/20/2014

EXPIRATION DATE: 04/15/2017

CLASSIFICATION(S) HELD: S-3

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
CEC's Earned:			.0	.0	.0
Total CEC's Earned:			0.0		

**OPERATOR:** Christopher C. Wilcox**OPER ID:** 18586**CERTIFIED:** ISSUE DATE: 11/05/2014**EXPIRATION DATE:** 01/15/2018**CLASSIFICATION(S) HELD:** F-4**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
02/18/2015	Technical Maintenance for W&WW Treatment	Davison	0.5		
CEC's Earned:			.5	.0	.0
Total CEC's Earned:			0.5		

**OPERATOR:** Brent F. Wright**OPER ID:** 3676**CERTIFIED:** ISSUE DATE: 07/16/2013**EXPIRATION DATE:** 07/15/2016**CLASSIFICATION(S) HELD:** F-2, S-3**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
12/31/2014	AWWA Membership	Varies			0.1
04/28/2014	Applied Hydraulics	Lansing	3.0		
01/14/2014	Electrical Training: Advanced	Lapeer	0.5		
12/31/2013	AWWA Membership	Varies			0.1
CEC's Earned:			3.5	.0	.2
Total CEC's Earned:			3.7		

**OPERATOR:** Charles V. Yanta**OPER ID:** 3678**CERTIFIED:** ISSUE DATE: 11/09/2011**EXPIRATION DATE:** 01/15/2015**CLASSIFICATION(S) HELD:** F-4**WSSN:** 2310**DISTRICT:** 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
02/04/2015	Joint Expo	Lansing			0.2
03/06/2014	Chlorine Safety Training Seminar	Flint	0		
06/27/2013	Chlorine Safety Training Seminar	Flint	0.2		
CEC's Earned:			.2	.0	.2
Total CEC's Earned:			0.4		

OPERATOR: Michael J. Young

OPER ID: 15877

CERTIFIED: ISSUE DATE: 01/16/2012

EXPIRATION DATE: 01/15/2015

CLASSIFICATION(S) HELD: S-4

WSSN: 2310

DISTRICT: 11

DATE	COURSE	LOCATION	Tech	Mgr	Other
07/24/2013	Permit Required Confined Space	Flint			0.6
07/10/2013	Arsenic in Drinking Water	Mt Pleasant	0.4		
06/05/2013	NUCA Excavation Safety & Competent	Flint			0.6
05/30/2013	Municipal Safety Day	Mason			0.4
CEC's Earned:			.4	.0	1.6
Total CEC's Earned:			2.0		

Michigan Community Water Supplies that have previously listed lead service line materials as part of  
Lead and Copper compliance monitoring – partial list

Supply Name and Water Supply Serial Number

Allen Park 0130	Pontiac 5440
Ash Twp. 0245	Redford Twp. 5640
Bloomfield Twp. 0790	River Rouge 5690
Brownstown 0940	Riverview 5710
Centerline 1290	Rockwood 5750
Dearborn Heights 1740	Romulus 5785
Dearborn 1730	Roseville 5820
Eastpoint 1950	Southgate 6170
Ecorse 2050	St. Clair Shores 6280
Farmington 2230	Taylor 6545
Ferndale 2280	Trenton 6650
Flat Rock 2300	Troy 6690
Flint 2310	Utica 6760
Garden City 2550	Warren 6900
Gibraltar 2630	Wayne 6950
Grosse Ile 2870	Westland 7470/7040
Grosse Pointe Park 2900	Ypsilanti Twp. 7260
Grosse Pointe Woods 2920	Berkley 0630
Hamtramck 2970	Beverly Hills 0690
Harper Woods 3020	Birmingham 0730
Hazel Park 3100	Clawson 1440
Huron Twp. 3320	Huntington Woods 3310
Inkster 3360	Lathrup Village 3800
Lincoln Park 3870	Pleasant Ridge 5390
Livonia 3930	Royal Oak 5830
Madison Heights 4000	Southfield 6160
Melvindale 4420	Greater Genesee County Water Supply Systems 2615
Oak Park 4880	Detroit 1800
Plymouth Twp. 5420	
Plymouth 5400	Lansing BWL 3760
	Bay City 0470

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY



USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF58414

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3714 BEECHER RD, FLINT  
Collected By: MELISSA MAYS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/24/2015 06:30  
Date Received: 03/31/2015 11:11  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.52	04/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	04/01/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. M000003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

**Sample Number**

**LF59749**



**Official Laboratory Report**

Report To: **MIKE GLASGOW**  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: **CITY OF FLINT**  
Collection Address: **1016 INGLESIDE AVE, FLINT**  
Collected By: **JAMES D JARVIS**  
Township/Well#/Section: **//**  
County: **Genesee**  
Sample Point: **KITCHEN**  
Water System: **Treated Public Distribution System**

WSSN/Pool ID: **2310**  
Source: **Single Family Dwelling**  
Site Code:  
Collector: **Private Citizen**  
Date Collected: **04/09/2015 07:00**  
Date Received: **04/14/2015 11:07**  
Purpose: **Routine Monitoring**

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.07	04/15/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	04/15/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 287-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julie Plesper  
Systems Mgmt. Unit Mgr: George Kriestian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8552

Sample Number

LF59750

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1818 ROCK CREEK LN, FLINT  
Collected By: HELEN HUNTER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/06/2015 08:50  
Date Received: 04/14/2015 11:07  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	04/15/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	04/15/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian





## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF59751

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 3010 CHEYENNE ST, FLINT  
Collected By: GERTRUDE MARSHALL  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/03/2015 08:50  
Date Received: 04/14/2015 11:07  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	04/15/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	04/15/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF61845



## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2020 CROOKED LN, FLINT  
Collected By: TRACY & MIKE SARGENT  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/24/2015 07:00  
Date Received: 05/04/2015 10:21  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	05/05/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	05/05/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF61846

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 310 E MOORE ST, FLINT  
Collected By: HUSTON BOLDEN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 04/22/2015 07:00  
Date Received: 05/04/2015 10:21  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	05/05/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	05/05/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF67423

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	344 ROBBIE LN, FLINT	Source:	Single Family Dwelling
Collected By:	CASSANDRA BROWN	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	05/31/2015 08:15
Sample Point:	BATHROOM	Date Received:	06/11/2015 10:51
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF67424

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 357 ROBBIE LN, FLINT  
Collected By: FRANK EVANS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/31/2015 08:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.20	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF67425

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 328 ROBBIE LN, FLINT  
Collected By: WILLIE TURNER  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/30/2015 06:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.09	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF67426

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 341 ROBBIE LN, FLINT  
Collected By: FLORISSA STEBBINS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID:  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/31/2015 06:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.05	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF67427

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 353 ROBBIE LN, FLINT  
Collected By: ZETAN EVANS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/30/2015 06:45  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian





## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF67428

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 349 ROBBIE LN, FLINT  
Collected By: DORIS NUNN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/31/2015 08:00  
Date Received: 06/11/2015 10:51  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/12/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	06/12/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF63410

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 631 ALVORD AVE, FLINT  
Collected By: JANICE BERRYMAN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/06/2015 07:00  
Date Received: 05/13/2015 11:26  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	05/14/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.042	05/14/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U. S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kiszian

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF63411



## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 216 BROWNING AVE, FLINT  
Collected By: DEB  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/07/2015 08:00  
Date Received: 05/13/2015 11:26  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.31	05/14/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.022	05/14/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY**

**DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

**Sample Number**

**LF59748**



**Official Laboratory Report**

Report To: **MIKE GLASGOW**  
**4500 N DORT HWY**  
**FLINT MI 48505**

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	212 BROWNING AVE, FLINT	Source:	Single Family Dwelling
Collected By:	LEEANNE WALTERS	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	04/02/2015 08:00
Sample Point:	PRE P O S FILTER	Date Received:	04/14/2015 11:07
Water System:	Treated Public Distribution System	Purpose:	Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.11	04/16/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.707	04/16/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

**Genesee County Health Dept.**  
**630 South Saginaw**  
**Flint, MI 48502-1540**  
**810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF54663



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 2205 FLUSHING RD, FLINT  
Collected By: CHRIS BEATENHEAD  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Public Water Supply Operator  
Date Collected: 02/15/2015 06:00  
Date Received: 02/17/2015 10:47  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.13	02/18/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	02/18/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF56223

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	4202 CUSTER AVE, FLINT	Source:	Single Family Dwelling
Collected By:	JACQUELINE PEMBERTON	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	03/04/2015 08:00
Sample Point:	KITCHEN	Date Received:	03/06/2015 11:33
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.27	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF56224

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 212 BROWNING AVE, FLINT  
Collected By: LEEANNE WALTERS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/03/2015 06:00  
Date Received: 03/06/2015 11:33  
Purpose: Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.397	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF56225

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	401 E NEWALL ST, FLINT	Source:	Single Family Dwelling
Collected By:	MARK CROMWELL SR	Site Code:	
Township/Well#/Section:	//	Collector:	Other
County:	Genesee	Date Collected:	03/02/2015 09:30
Sample Point:	KITCHEN	Date Received:	03/06/2015 11:33
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.005	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number  
LF56226**

**Official Laboratory Report**

Report To: **MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505**

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	215 BROWNING AVE, FLINT	Source:	Single Family Dwelling
Collected By:	KEVIN & JENNIFER STARNES	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	03/02/2015 06:30
Sample Point:	KITCHEN	Date Received:	03/06/2015 11:33
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.16	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF56227

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	2615 TRUMBULL AVE, FLINT	Source:	Single Family Dwelling
Collected By:	JENNIFER PEDERSON	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	02/27/2015 10:00
Sample Point:	KITCHEN	Date Received:	03/06/2015 11:33
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.003	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF56228

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	201 BROWNING AVE, FLINT	Source:	Single Family Dwelling
Collected By:	FLOYD BELL	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	03/05/2015 09:30
Sample Point:	KITCHEN	Date Received:	03/06/2015 11:33
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/10/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	03/10/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF54945

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 212 BROWNING AVE, FLINT  
Collected By: LEANNE WALTERS  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 02/18/2015 07:15  
Date Received: 02/19/2015 11:13  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	02/20/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.104	02/20/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pleper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF54946

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1809 STEVENSON ST, FLINT  
Collected By: MIKE TAYLOR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN SINK  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 02/10/2015 06:30  
Date Received: 02/19/2015 11:13  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	02/20/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.010	02/20/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57728



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1224 DECKER ST, FLINT	Source:	Single Family Dwelling
Collected By:	LOU ANNE MALIS	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	03/17/2015 06:00
Sample Point:	KITCHEN	Date Received:	03/24/2015 11:05
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.10	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.013	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kriszian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57729



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	212 BROWNING AVE, FLINT	Source:	Single Family Dwelling
Collected By:	MIKE GLASGOW	Site Code:	
Township/Well#/Section:	//	Collector:	Public Water Supply Operator
County:	Genesee	Date Collected:	03/18/2015 11:10
Sample Point:	KITCHEN	Date Received:	03/24/2015 11:05
Water System:	Treated Public Distribution System	Purpose:	Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

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Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



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Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57730

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1220 DECKER ST, FLINT	Source:	Single Family Dwelling
Collected By:	CARMEN PULIDO	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	03/17/2015 06:00
Sample Point:	KITCHEN	Date Received:	03/24/2015 11:05
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian





MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57731

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1379 WASHINGTON, FLINT  
Collected By: ROXANNE PUTMAN  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/19/2015 08:30  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.008	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Fleper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

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P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

**Sample Number  
LF57732**



**Official Laboratory Report**

Report To: **MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505**

System Name/Owner: **CITY OF FLINT**  
Collection Address: **1383 WASHINGTON AVE, FLINT**  
Collected By: **ANTHONY PALLADENO**  
Township/Well#/Section: **//**  
County: **Genesee**  
Sample Point: **KITCHEN**  
Water System: **Treated Public Distribution System**

WSSN/Pool ID: **2310**  
Source: **Single Family Dwelling**  
Site Code:  
Collector: **Private Citizen**  
Date Collected: **03/09/2015 08:00**  
Date Received: **03/24/2015 11:05**  
Purpose: **Routine Monitoring**

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.16	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3803**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. M100003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

**Sample Number**

**LF57733**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1372 WASHINGTON AVE, FLINT  
Collected By: ANTHONY PALLADENO JR  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/19/2015 08:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.002	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

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Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

**Genesee County Health Dept.**  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY****DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

**Sample Number****LF57734****Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1383 WASHINGTON AVE, FLINT  
Collected By: ANTHONY PALLADENO III  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/19/2015 08:00  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.17	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

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Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

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630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF57735

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1367 WASHINGTON AVE, FLINT	Source:	Single Family Dwelling
Collected By:	LEAH PALLADENO	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	03/17/2015 06:00
Sample Point:	MAIN BATHROOM	Date Received:	03/24/2015 11:05
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.001	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

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Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY****DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

**Sample Number****LF57736****Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1701 MARQUETTE DR, FLINT  
Collected By: CHARMA DOMPHEH  
Township/Well#/Section: //  
County: Genesee  
Sample Point: KITCHEN  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/14/2015 09:40  
Date Received: 03/24/2015 11:05  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.19	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.001	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kriszian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF68791

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1615 S FRANKLIN AVE, FLINT	Source:	Single Family Dwelling
Collected By:	VIVAN GRIER	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/14/2015 09:45
Sample Point:	KITCHEN	Date Received:	06/19/2015 11:02
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
610 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF68792

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	853 E 7TH ST, FLINT	Source:	Single Family Dwelling
Collected By:	LAURA STUDACHER	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/12/2015 06:30
Sample Point:	BATHROOM	Date Received:	06/19/2015 11:02
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.07	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kriszian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



Sample Number  
LF68793

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	1150 WOODSIDE DR, FLINT	Source:	Single Family Dwelling
Collected By:	DEBORAH CONRAD	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/14/2015 07:30
Sample Point:	KITCHEN	Date Received:	06/19/2015 11:02
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.029	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF68794

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	547 COPEMAN BLVD, FLINT	Source:	Single Family Dwelling
Collected By:	LINDA LEE	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	06/14/2015 09:00
Sample Point:	KITCHEN	Date Received:	06/19/2015 11:02
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/22/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.018	06/22/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kiszian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number  
LF68023



Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 1807 OREN AVE, FLINT  
Collected By: MARK RUSSEL  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: Single Family Dwelling  
Site Code:  
Collector: Private Citizen  
Date Collected: 06/08/2015 07:30  
Date Received: 06/16/2015 11:11  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	06/17/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.021	06/17/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS#: Chemical Abstract Service Registry Number  
MCL: Maximum Contaminant Level  
AL: Action Level  
RL: Reporting Limit

mg/L: milligrams / Liter (ppm)  
ppm: parts per million  
MPN: Most Probable Number  
CFU: Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF64282

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 625 S GRAND TRAVERSE, FLINT  
Collected By: MIKE GLASGOW  
Township/Well#/Section: //  
County: Genesee  
Sample Point: BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE III  
Site Code:  
Collector: Public Water Supply Operator  
Date Collected: 05/15/2015 13:00  
Date Received: 05/20/2015 11:24  
Purpose: Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.017	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562



**Sample Number**  
**LF64283**

**Official Laboratory Report**

Report To: **MIKE GLASGOW**  
**4500 N DORT HWY**  
**FLINT MI 48505**

System Name/Owner: **CITY OF FLINT**  
Collection Address: **3714 BEECHER RD, FLINT**  
Collected By: **MELISSA MAYS**  
Township/Well#/Section: **//**  
County: **Genesee**  
Sample Point: **MAIN BATHROOM**  
Water System: **Treated Public Distribution System**

WSSN/Pool ID: **2310**  
Source: **Single Family Dwelling**  
Site Code:  
Collector: **Private Citizen**  
Date Collected: **05/14/2015 06:00**  
Date Received: **05/20/2015 11:24**  
Purpose: **Routine Monitoring**

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.15	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.008	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.**  
**630 South Saginaw**  
**Flint, MI 48502-1540**  
**810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562

Sample Number  
LF64284

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	625 S GRAND TRAVERSE, FLINT	Source:	TYPE III
Collected By:	MIKE SARGENT	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	05/18/2015 08:30
Sample Point:	UTILITY SINK	Date Received:	05/20/2015 11:24
Water System:	Treated Public Distribution System	Purpose:	Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.020	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



Sample Number  
LF64285

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	912 LEXINGTON AVE, FLINT	Source:	Single Family Dwelling
Collected By:	LAURA HATT	Site Code:	
Township/Well#/Section:	//	Collector:	Private Citizen
County:	Genesee	Date Collected:	05/15/2015 09:00
Sample Point:	MAIN BATHROOM	Date Received:	05/20/2015 11:24
Water System:	Treated Public Distribution System	Purpose:	Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.006	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

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Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

## Thelen, Mary Beth (DEQ)

---

**From:** Emmitt, Beth (GOV)  
**Sent:** Wednesday, September 30, 2015 12:44 PM  
**To:** Muchmore, Dennis (GOV); McBride, Bill (GOV); Lyon, Nick (DCH); Wyant, Dan (DEQ)  
**Cc:** Wisniewski, Wendy (GOV); Grijalva, Nancy (DCH); Thelen, Mary Beth (DEQ)  
**Subject:** FW: Rep. Kildee Follow Up On Call from Monday  
**Attachments:** 092915 Kildee Follow Up On Call With Gov Snyder.pdf

FYI

**From:** Dickinson, Jordan [mailto:Jordan.Dickinson@mail.house.gov]  
**Sent:** Tuesday, September 29, 2015 3:39 PM  
**To:** Emmitt, Beth (GOV) <emmittb@michigan.gov>  
**Cc:** McBride, Bill (GOV) <mcbrideb@michigan.gov>; Murray, David (GOV) <MurrayD1@michigan.gov>; Brown, Eric (GOV) <BrownE15@michigan.gov>; Wurfel, Brad (DEQ) <WurfelB@michigan.gov>; Pallone, Maggie (DEQ) <PalloneM@michigan.gov>  
**Subject:** Rep. Kildee Follow Up On Call from Monday

Hi Beth,

Could you please make sure the Governor and the rest of the staff on the call from Monday see this letter?

Thank you,

**Jordan Dickinson**  
Legislative Assistant  
Congressman Dan Kildee (MI-05)  
227 Cannon House Office Building  
Washington, D.C. 20515  
Phone: (202) 225-3611  
[www.dankildee.house.gov](http://www.dankildee.house.gov)



[Sign up for Congressman Dan Kildee's e-newsletter](#)



DANIEL T. KILDEE  
5TH DISTRICT, MICHIGAN

COMMITTEE ON  
FINANCIAL SERVICES

SUBCOMMITTEE ON  
HOUSING AND INSURANCE

SUBCOMMITTEE ON  
MONETARY POLICY AND TRADE

SENIOR WHIP

DEMOCRATIC POLICY AND  
COMMUNICATIONS COMMITTEE



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House of Representatives  
Washington, DC 20515

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WASHINGTON, DC 20515  
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(202) 225-6393 (FAX)

DISTRICT OFFICE

111 EAST COURT STREET #3B  
FLINT, MI 48502  
(810) 238-8627  
(810) 238-8658 (FAX)

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REP/DANKILDEE

REP/DANKILDEE

September 29, 2015

Governor Rick Snyder  
Executive Office of the Governor  
P.O. Box 30013  
Lansing, Michigan 48909

Governor Snyder:

*Rick*

I appreciate you taking the time to talk with me yesterday about continued efforts to ensure the safety of the city of Flint's water. I want to summarize some of the items we discussed in order to work together going forward.

It is my hope that the state of Michigan immediately purchase and distribute lead-clearing water filters to Flint residents. As we discussed, I urge you to look for funding in areas such as the Michigan Health Endowment Fund or Michigan Department of Environmental Quality for these much-needed filters. Ultimately, it is the responsibility of the state to ensure the safety of drinking water. While lead-clearing filters will not permanently fix the underlying issues with Flint's water infrastructure system, they will ensure safe drinking water in the interim and help to restore confidence that the water is lead-free and safe to drink.

Additionally, it is imperative that the state release a health advisory regarding the quality of the water in Flint. The public has a right to know about the safety of their water, and it is important to ensure they have the information necessary to help mitigate adverse health impacts.

In addition, I ask that the state formally request assistance from federal agencies. As we have previously discussed, it appears there may be potential opportunities for the state to use the Federal Safe Drinking Water Act State Revolving Fund to invest and improve the water infrastructure in Flint. Following the state's request, my office can work with the appropriate federal agencies seeking assistance.

Finally, going forward, it will be critical to have additional independent and scientific testing to instill confidence in Flint residents that their water is safe. Testing needs to be completed regularly, on a larger scale than previously and must include the most at-risk homes in Flint.

I look forward to continuing to work with you and your staff to provide the necessary immediate assistance to the residents of Flint and develop a long term solution to the issues facing Flint's infrastructure.

For actions in the state of Michigan, please contact my District Chief of Staff Amy Hovey (810-241-3864 or [Amy.Hovey@mail.house.gov](mailto:Amy.Hovey@mail.house.gov)). For questions regarding federal policy, please contact Jordan Dickinson (202-225-3611 or [Jordan.Dickinson@mail.house.gov](mailto:Jordan.Dickinson@mail.house.gov)).

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Kildee", with a stylized flourish at the end.

Dan Kildee  
MEMBER OF CONGRESS

## **Olszewski, Rosemarie (DEQ)**

---

**From:** Feuerstein, Heather (DEQ)  
**Sent:** Thursday, September 17, 2015 7:43 PM  
**To:** 'Ananich, Senator Jim '; 'Neeley, Rep Sheldon'; 'Phelps, Rep Phil'  
**Cc:** 'Jordan.Dickinson@mail.house.gov'; 'dwalling@cityofflint.com'; 'hcroft@cityofflint.com'; 'hedman.susan@epa.gov'; 'poy.thomas@epa.gov'; 'Schock.michael@epa.gov'; 'Lytle.darren@epa.gov'; 'fortin.denise@epa.gov'; 'Edwardsm@vt.edu'; Hollins, Harvey (GOV); McBride, Bill (GOV); Brown, Eric (GOV); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Anderson, Madhu (DEQ); Copen, Leigh (DEQ); Pallone, Maggie (DEQ); Howes, Sarah (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ)  
**Subject:** MDEQ response to letter regarding Flint water  
**Attachments:** Flint Water Response.pdf

Attached please find the MDEQ's response to your September 10, 2015, letter regarding Flint drinking water.

Thank you,  
Heather Feuerstein  
Management Assistant to  
Maggie Pallone, Deputy Director and  
Brad Wurfel, Communications Director  
Department of Environmental Quality  
517.284.6715



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

September 17, 2015

VIA E-MAIL

The Honorable Jim Ananich  
State Senator  
State Capitol  
P.O. Box 30036  
Lansing, Michigan 48909-7536

The Honorable Sheldon Neeley  
State Representative  
State Capitol  
P.O. Box 30014  
Lansing, Michigan 48909-7514

The Honorable Phil Phelps  
State Representative  
State Capitol  
P.O. Box 30014  
Lansing, Michigan 48909-7514

Dear Senator Ananich and Representatives Neeley and Phelps:

Thank you for your letter of September 10, 2015, regarding water quality in the city of Flint (City). Your interest in this matter is appreciated. The Michigan Department of Environmental Quality (MDEQ) takes seriously its responsibility to ensure safe drinking water for all Michigan residents. The MDEQ maintains a robust public water supply regulatory program through long-standing partnerships with the United States Environmental Protection Agency (USEPA) and the state's regulated public water systems.

With respect to the draft memo referenced in your letter, the MDEQ does not review or receive draft memos from the USEPA, nor would we expect to while it is a draft.

Regulations associated with lead, copper, and corrosion control require communities to monitor water quality at customer taps. The monitoring protocols for sampling home water attempt to represent actual home water use, and they allow the MDEQ to get consistent results for year-over-year comparisons.

It is important to recognize that any home with lead plumbing or service connections will impart some amount of lead to water samples. While the compliance monitoring for lead in the City has not exceeded the federally-established Action Level, either before or after the City switched sources and treatment methods, there has always been

The Honorable Jim Ananich  
The Honorable Sheldon Neeley  
The Honorable Phil Phelps  
Page 2  
September 17, 2015

detectable lead in the City's water sampling program for homes that have lead plumbing or service connections. The City's monitoring program's purpose is to show aggregated levels throughout the entire system, not individual home levels.

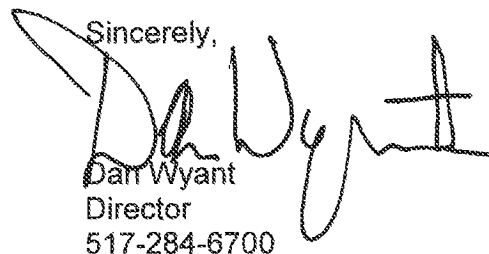
The law requires the City to provide individual lead results to customers whose homes are sampled for compliance with the Action Level. Each customer with an individual sample result that exceeds 15 parts per billion is provided information on actions they can take to limit lead exposure in their drinking water. System-wide results from the most recent lead compliance monitoring are included each year in the City's annual Consumer Confidence Report, which is provided to customers and available online.

It is important to note that the City performed extensive home water tests for lead and copper last year and this year, and is meeting state and federal drinking water standards. Local health departments also administer annual blood level testing on children in Flint; results show no discernable rise in levels that might be expected if there was an elevated lead level in the City water supply. The City currently has no unresolved violations of state and federal drinking water standards.

The MDEQ continues to work with the City and federal regulators on the shared goal of ensuring safe, reliable drinking water in this community.

I look forward to discussing this issue in greater detail at the meeting next week. If you should have additional questions before then, please contact Ms. Maggie Pallone, Deputy Director, Policy and Legislative Affairs, at 517-284-6715 or [pallonem@michigan.gov](mailto:pallonem@michigan.gov); or you may contact me.

Sincerely,



Dan Wyant  
Director  
517-284-6700

The Honorable Jim Ananich  
The Honorable Sheldon Neeley  
The Honorable Phil Phelps  
Page 3  
September 17, 2015

cc: U.S. Representative Dan Kildee  
Mayor Dayne Walling, City of Flint  
Mr. Howard Croft, City of Flint  
Dr. Susan Hedman, Regional Administrator, USEPA, Region 5  
Mr. Thomas Poy, USEPA, Region 5  
Ms. Denise Fortin, USEPA, Region 5  
Mr. Michael Schock, USEPA  
Mr. Darren Lytle, USEPA  
Mr. Marc Edwards, Virginia Tech  
Mr. Harvey Hollins, Governor's Southeast Michigan Office  
Mr. Bill McBride, Governor's Washington Office  
Mr. Eric Brown, Governor's Washington Office  
Mr. Jim Sygo, Chief Deputy Director, MDEQ  
Ms. Madhu R. Anderson, Deputy Director, MDEQ  
Ms. Maggie Pallone, Deputy Director, MDEQ  
Ms. Sarah M. Howes, Legislative Liaison, MDEQ  
Mr. Brad Wurfel, Communications Director, MDEQ  
Ms. Liane Shekter Smith, MDEQ  
Mr. Richard Benzie, MDEQ  
Mr. Stephen Busch, MDEQ  
Mr. Pat Cook, MDEQ

## Thelen, Mary Beth (DEQ)

---

**From:** Dayne Walling <dwalling@cityofflint.com>  
**Sent:** Wednesday, September 30, 2015 10:10 PM  
**To:** Wyant, Dan (DEQ)  
**Subject:** what we are facing in Flint

Dan, I am continuing to communicate with a wide variety of constituents in an attempt to determine the major questions and issues. Below you will find an email that I received personally from a faith community leader who has been incredibly supportive and understanding of the challenges facing Flint. His words really hurt: "I no longer trust the city on this issue." I have searched myself over and over on this. I don't know what more I could have done given the guidance coming from EPA and DEQ and subsequently city staff but this major health issue did come up anyway and our community is paying a huge price.

As the press conference is put together, it is necessary in my mind that we provide an explanation for how this happened and outline the steps that ensure it will never happen again. If this is not provided then the trust will not begin to be restored from what I can tell. I am always available to talk more. Please consider this.

Dayne

----- Forwarded message -----

Date: Wed, Sep 30, 2015 at 12:48 AM  
Subject: Re: water updates

Dear Mayor Walling,

You delayed your action on this issue for an inordinate amount of time. People were told over and over that it was all fine. I am very disappointed in the efforts concerned Pastors and others( the lawsuit, etc) that had to go on before anything substantial was contemplated. I am up north at a priest conference and I am astonished at the taste of the water and the lack of unpleasant smell I am finding here, in contrast to the very unpleasant experience it is to shower in Flint water. I no longer trust the city on this issue. And that we have now a lead problem for babies and children is unconscionable. Permanent brain damage is all our children need.

Respectfully yours,  
Fr. Phil Schmitter

Sent from my iPhone

--

Dayne Walling  
Mayor, City of Flint  
City Hall, 1101 S. Saginaw St.  
Flint, MI 48502  
810-766-7346  
[mayor@cityofflint.com](mailto:mayor@cityofflint.com)  
[www.cityofflint.com](http://www.cityofflint.com)  
follow me on twitter at <http://twitter.com/mayorwalling>



## **Frequently Asked Questions:** **Water Lead Levels in the City of Flint** **September 2015**



### **How can lead get into drinking water?**

Lead detections in Flint drinking water exist at the home level. Sampling at the Flint Water Treatment Plant has shown no lead in its treated water. However, this contaminant leaches into water from a home's lead service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings.

### **Does the city meet federal drinking water standards for lead and copper?**

Yes, the city is meeting state and federal guidelines for lead and copper.

The City of Flint has regularly monitored for lead and copper since federal law began requiring it in 1991.

When the City changed water sources in May 2014, state and federal law required the city to sample for lead and copper for a full year to determine how the water may be interacting with residential lead plumbing to increase lead levels. While the city's results show residential lead levels below the federal threshold for immediate response activities, Flint is moving quickly to optimize corrosion control measures in its water system.

### **Some individual homes showed high numbers for lead. Isn't that a concern?**

For the homeowner, yes it is. There is no "safe" level for lead, and while the leading cause of lead poisoning around the country is lead paint, any source of lead ingestion is worthy of concern.

But the State and federal guidelines for lead and copper acknowledge an important reality: Any home that has a lead service connection or lead plumbing will impart some varying amount of lead into the home's water. The only way to eliminate lead in a home water system is to remove lead plumbing or replace lead service connections to the city system.

The lead and copper rule requires the local operator to sample dozens, sometimes hundreds of homes in the service area to get a general sense of how the water supply is interacting with lead plumbing and service connections. The tests are done specifically at homes with lead service connections. Individual results vary and all participants are



**Are there other ways the city monitors for lead exposure?**

The County Health Department, overseen statewide by the Michigan Department of Health and Human Services, regularly monitors blood levels in children throughout Michigan communities. The leading cause of lead poisoning is exposure to lead paint.

Blood lead level testing results for the 12-month period just after the City of Flint changed its water source (May 2014 – April 2015) showed no significant change in the pattern of blood lead levels in Flint, compared to the previous three years. This data suggests the recent change in water source by the City of Flint has not contributed to an increase in lead exposure throughout the community.

**How does the state decide if the water is creating a lead problem?**

Compliance with the federal lead rule is based on a 90<sup>th</sup> percentile calculation. If more than 10 percent of samples report lead above the federal action level of **15 parts per billion**, a water supply has an "action level exceedance." An exceedance is not a violation. It triggers other requirements which could include public notification, additional water quality sampling, and possibly further treatment.

While some of Flint's individual samples exceeded the 15 parts-per-billion lead action level, compliance is based on **the 90<sup>th</sup> percentile of samples**. The City of Flint's 90<sup>th</sup> percentile level has ranged between 0 parts per billion in 2008 and 2011, and 15 parts per billion in 1992, but never exceeded the action level.

The two most recent sampling periods, in 2014 and 2015, were 6 parts per billion and 11 parts per billion, respectively.

**Did the city use every sample they got back?**

Sampling requirements for lead and copper are designed to target the most common pathways to lead ingestion in homes with the least protection. The sample must be collected from a commonly used kitchen or bathroom tap, and in accordance with the provided sampling instructions. Homes that employ filtration or additional treatment cannot be included. Samples must also be collected within the established monitoring period.

**I have a lead service connection or lead plumbing. What should I do?**

Replacement is the only way to eliminate lead exposure. However, here are some interim steps homeowners can take to reduce it:

Flush pipes before drinking, and only use cold water for consumption.

The more time water has been sitting in your home's pipes, the more lead it may contain. When water in a particular faucet has not been used for six hours or longer, "flush" cold-water pipes by running the water until it becomes as cold as it will get. This could take five to 30 seconds if there has been recent water use elsewhere in the home, such as showering or flushing toilets. Otherwise, it could take two minutes or longer.

Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead.

**Who is responsible for replacement of lead materials?**

Replacement of service pipes on private property and any leaded plumbing materials within the home is a **homeowner's responsibility**. The City of Flint owns the service pipe from the water main to the curb stop valve, and that is **the City's responsibility**. This valve is normally located two feet in from the street curb. From there to the house is private property and the responsibility of the homeowner.

**Why doesn't the city at least replace its portion of lead service lines?**

Partial lead service line replacement has been shown to mobilize more lead and make the situation worse. Only full lead service line replacement has been demonstrated effective in achieving long-term reductions in drinking water lead levels.

**What is the City's timeline for installation of corrosion control treatment?**

The federal government allows the steps to complete the installation of optimal corrosion control treatment and follow-up monitoring to take up to five years.

However, the City of Flint has committed to completing installation of Optimized Corrosion Control Treatment in **less than six months**.

**What will happen when Flint joins the Karegnondi Water Authority next year?**

The City has committed to having Optimized Corrosion Control Treatment in place prior to its connection with the Karegnondi Water Authority (KWA). The water provided by KWA will come from a new source, Lake Huron. The city will continue its lead and copper sampling every six months. Additionally, the city's water treatment plant will continue to operate with uninterrupted Optimized Corrosion Control Treatment.

**How long would it take to replace lead service lines throughout Flint?**

The city has about 32,900 service connections in total. **More than 15,000** of these connections are considered lead service lines. Even if many crews were contracted, it would likely take up to 15 years to complete this work.

**What would it cost to replace the lead service line at my house?**

Average costs to replace a lead service line at an individual home range from \$2,000 to \$8,000. Costs vary depending on the length and size of service line that is needed, as well as the ground cover and soil conditions encountered.

With more than 15,000 lead service lines at an estimated average cost of \$4,000 for each replacement, total cost could be **\$60 million or more**.

## **Shekter Smith, Liane (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, August 25, 2015 1:56 PM  
**To:** 'lwalters313@gmail.com'  
**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Follow Up from our Aug. 4th meeting

Dear Ms. Walters,

I wanted to update you regarding our Department's findings related to questions raised during our meeting at the Governor's office on August 4. I apologize for the delay in getting back to you.

### Lead and Copper Monitoring

Regarding Flint lead and copper compliance monitoring for the January – June 2015 period, the City has confirmed that all lead and copper samples collected throughout the City, whether routine sites or customer requests, were sent to the State of Michigan lab for analysis. Individual sample results are provided to the property owner within 30 days of receiving the lab results in accordance with the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 410(5)). Results from the State of Michigan lab are provided directly to our Office.

Staff have confirmed that the lead 90<sup>th</sup> percentile compliance calculation of 11 parts per billion is based on 69 samples that met the appropriate sampling location site criteria, and met the sample collection site and collection protocol requirements of the Safe Drinking Water Act for this monitoring period. A minimum of 60 samples were required for this monitoring period. As indicated during the meeting, the City's sampling for lead complies with the Action Level standard of 15 parts per billion, but based on the population served by the City and these results, the City will need to make a recommendation to the MDEQ on how they will fully optimize their corrosion control treatment. These next steps continue to follow the requirements of the Lead and Copper Rule.

Samples collected at your residence of 212 Browning Avenue were not included this compliance determination as you utilize a whole home filter. As stated in the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 710a, Lead and Copper in tap water; monitoring requirements) "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment alters the water chemistry and water quality such that it is no longer representative of public water from the City's distribution system. Therefore, the City cannot use samples collected at your residence as part of its determination for public water system compliance with the lead or copper action level standard.

### Sample Summary (samples taken at your residence)

For your information, we are providing the information that we've gathered regarding samples collected at your home. Our records indicate between February and June of this year there were six samples collected by either you or Mr. Mike Glasgow with the City of Flint, and submitted to the State Laboratory for analysis as follows:

February 11, Bathroom tap, collected at 10:20 AM by Mike Glasgow. This sample was analyzed for aesthetic metals (copper, iron, manganese, and zinc) which does not include lead analysis.

February 18, Kitchen tap, collected at 7:15 AM by you. This sample was analyzed for lead (104 parts per billion) and copper (non-detect).

February 25, Kitchen tap, collected at 10:26 AM by Mike Glasgow. This sample was analyzed for metals including lead. All results (including lead) were non-detect except for Barium 0.01 parts per million. The result for Barium was well below its maximum contaminant level of 2 parts per million.

March 3, Kitchen tap, collected at 6:00 AM by you. This sample was analyzed for lead (397 parts per billion) and copper (non-detect).

March 18, Kitchen tap, collected at 11:10 AM by Mike Glasgow. This sample was analyzed for lead (4 parts per billion) and copper (non-detect).

April 2, Pre-point of service, collected at 8:00 AM by you. This sample was analyzed for lead (707 parts per billion) and copper (110 parts per billion).

#### Lead Education/Outreach

As we discussed during the meeting, we support efforts to educate homeowners about the sources of lead in their private residence, provide guidance measures to reduce the potential for lead exposure, and provide information on resources for lead abatement. Along those lines, our Office has been in contact with the Department of Health and Human Services, Environmental Health Division, Healthy Homes Section and had some preliminary discussions about a public education and assistance campaign regarding household lead issues, guidance and abatement.

Lead monitoring by public water systems serves a dual purpose. The first purpose is to ensure the public water supply is adequately treating its water to address corrosion potential and help limit lead exposure. The second purpose is to inform homeowners about lead levels within their individual residence so that they can make educated choices regarding their own exposure risk.

#### pH Results

During the meeting concerns were also expressed regarding pH levels within customer plumbing systems. As you may know, pH has no associated contaminant level as it is simply a numeric scale used to specify the acidity or alkalinity of a solution. The City of Flint conducts daily monitoring of pH values on both its raw and finished (treated) water at the City's water treatment plant as part of its operations. The City is also required to conduct water quality parameter monitoring in the distribution system, which includes pH. Samples are analyzed in accordance with Standard Methods using properly calibrated analytical equipment. Results for pH from these samples are summarized below.

Since late April 2014 – June 2015, the following pH conditions were reported:

Water Treatment Plant – Finished Water plant tap pH range = 7.07 minimum to 9.9 maximum, overall average 7.7, measured daily. We believe the 9.9 is a one- time anomaly from softening treatment.

Distribution System – Water Quality Parameters taken from 25 sample sites located throughout and monitored quarterly

July – Sept. 2014: pH 7.71 average, range 7.56 – 7.86

Oct. – Dec. 2014: pH 7.88 average, range 7.62 – 8.10

Jan. – March 2015: pH 7.81 average, range 7.60 – 7.99

April – June 2015: pH 7.63 Average, range 7.48 – 7.80

In addition, the City's treated water contains alkalinity, which is a measurement of the buffering capacity of water to resist a change in pH. As you can see from the water quality parameter monitoring results above there has been very little change in pH within the City's distribution system. The pH levels described within customer site piping or premise plumbing systems are believed to be the result of onsite treatment and not representative of water quality shown to be occurring in the public water supply system.

#### Consumer Confidence Report

Finally, there was confusion during the meeting regarding the City's annual water quality report, the Consumer Confidence Report which we have since been able to clarify.

The City of Flint issued two separate Consumer Confidence Reports (CCR's) in 2015 covering the water quality data from 2014. One report was for the period of January – April 2014 when the City was obtaining water from Detroit (DWSD). And a second report was for the period April – December 2014 when the City was using the Flint River and its own Water Treatment Plant.

The CCR for DWSD water was mailed to customers in June. The Flint River based CCR was mailed to customers in mid-July, delayed due to issues with the printing contractor. We agree that having two separate reports caused confusion. We are working with the City to ensure both reports are posted to the City's website and both are made available when requested by customers. Should the City choose to create separate CCR's during the year that the City of Flint connects to the Karegnondi Water Authority we will work with the City to provide more clarity and try to have all material included in a single mailing.

The DWSD based CCR is the one community members had at the meeting, while the DEQ brought a copy of the Flint River based CCR. As separate and distinct sampling was done under each source, this explains the discrepancy in the values and monitoring periods being reported in the respective CCR's.

We appreciate your interest in these matters and hope this has addressed many of the questions brought up during our meeting. I would like to provide this information to both Dr. Sullivan and Ms. Mayes, but I do not have their contact information. I'm hoping you can share this with them and any others that may be interested.

Sincerely,

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

## **Devereaux, Tracy Jo (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, August 25, 2015 1:56 PM  
**To:** lwalters313@gmail.com  
**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Follow Up from our Aug. 4th meeting

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Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543



## **Busch, Stephen (DEQ)**

---

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**Sent:** Tuesday, August 25, 2015 1:56 PM  
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**Cc:** Busch, Stephen (DEQ); Devereaux, Tracy Jo (DEQ)  
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Samples collected at your residence of 212 Browning Avenue were not included this compliance determination as you utilize a whole home filter. As stated in the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 710a, Lead and Copper in tap water; monitoring requirements) "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment alters the water chemistry and water quality such that it is no longer representative of public water from the City's distribution system. Therefore, the City cannot use samples collected at your residence as part of its determination for public water system compliance with the lead or copper action level standard.

### Sample Summary (samples taken at your residence)

For your information, we are providing the information that we've gathered regarding samples collected at your home. Our records indicate between February and June of this year there were six samples collected by either you or Mr. Mike Glasgow with the City of Flint, and submitted to the State Laboratory for analysis as follows:

February 11, Bathroom tap, collected at 10:20 AM by Mike Glasgow. This sample was analyzed for aesthetic metals (copper, iron, manganese, and zinc) which does not include lead analysis.

February 18, Kitchen tap, collected at 7:15 AM by you. This sample was analyzed for lead (104 parts per billion) and copper (non-detect).

February 25, Kitchen tap, collected at 10:26 AM by Mike Glasgow. This sample was analyzed for metals including lead. All results (including lead) were non-detect except for Barium 0.01 parts per million. The result for Barium was well below its maximum contaminant level of 2 parts per million.

March 3, Kitchen tap, collected at 6:00 AM by you. This sample was analyzed for lead (397 parts per billion) and copper (non-detect).

March 18, Kitchen tap, collected at 11:10 AM by Mike Glasgow. This sample was analyzed for lead (4 parts per billion) and copper (non-detect).

April 2, Pre-point of service, collected at 8:00 AM by you. This sample was analyzed for lead (707 parts per billion) and copper (110 parts per billion).

#### Lead Education/Outreach

As we discussed during the meeting, we support efforts to educate homeowners about the sources of lead in their private residence, provide guidance measures to reduce the potential for lead exposure, and provide information on resources for lead abatement. Along those lines, our Office has been in contact with the Department of Health and Human Services, Environmental Health Division, Healthy Homes Section and had some preliminary discussions about a public education and assistance campaign regarding household lead issues, guidance and abatement.

Lead monitoring by public water systems serves a dual purpose. The first purpose is to ensure the public water supply is adequately treating its water to address corrosion potential and help limit lead exposure. The second purpose is to inform homeowners about lead levels within their individual residence so that they can make educated choices regarding their own exposure risk.

#### pH Results

During the meeting concerns were also expressed regarding pH levels within customer plumbing systems. As you may know, pH has no associated contaminant level as it is simply a numeric scale used to specify the acidity or alkalinity of a solution. The City of Flint conducts daily monitoring of pH values on both its raw and finished (treated) water at the City's water treatment plant as part of its operations. The City is also required to conduct water quality parameter monitoring in the distribution system, which includes pH. Samples are analyzed in accordance with Standard Methods using properly calibrated analytical equipment. Results for pH from these samples are summarized below.

Since late April 2014 – June 2015, the following pH conditions were reported:

Water Treatment Plant – Finished Water plant tap pH range = 7.07 minimum to 9.9 maximum, overall average 7.7, measured daily. We believe the 9.9 is a one- time anomaly from softening treatment.

Distribution System – Water Quality Parameters taken from 25 sample sites located throughout and monitored quarterly

July – Sept. 2014: pH 7.71 average, range 7.56 – 7.86

Oct. – Dec. 2014: pH 7.88 average, range 7.62 – 8.10

Jan. – March 2015: pH 7.81 average, range 7.60 – 7.99

April – June 2015: pH 7.63 Average, range 7.48 – 7.80

In addition, the City's treated water contains alkalinity, which is a measurement of the buffering capacity of water to resist a change in pH. As you can see from the water quality parameter monitoring results above there has been very little change in pH within the City's distribution system. The pH levels described within customer site piping or premise plumbing systems are believed to be the result of onsite treatment and not representative of water quality shown to be occurring in the public water supply system.

### Consumer Confidence Report

Finally, there was confusion during the meeting regarding the City's annual water quality report, the Consumer Confidence Report which we have since been able to clarify.

The City of Flint issued two separate Consumer Confidence Reports (CCR's) in 2015 covering the water quality data from 2014. One report was for the period of January – April 2014 when the City was obtaining water from Detroit (DWSD). And a second report was for the period April – December 2014 when the City was using the Flint River and its own Water Treatment Plant.

The CCR for DWSD water was mailed to customers in June. The Flint River based CCR was mailed to customers in mid-July, delayed due to issues with the printing contractor. We agree that having two separate reports caused confusion. We are working with the City to ensure both reports are posted to the City's website and both are made available when requested by customers. Should the City choose to create separate CCR's during the year that the City of Flint connects to the Karegnondi Water Authority we will work with the City to provide more clarity and try to have all material included in a single mailing.

The DWSD based CCR is the one community members had at the meeting, while the DEQ brought a copy of the Flint River based CCR. As separate and distinct sampling was done under each source, this explains the discrepancy in the values and monitoring periods being reported in the respective CCR's.

We appreciate your interest in these matters and hope this has addressed many of the questions brought up during our meeting. I would like to provide this information to both Dr. Sullivan and Ms. Mayes, but I do not have their contact information. I'm hoping you can share this with them and any others that may be interested.

Sincerely,

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

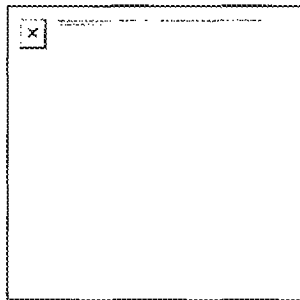
**Thelen, Mary Beth (DEQ)**

---

**From:** Caleb Laieski <caleb\_m\_laieski@yahoo.com>  
**Sent:** Tuesday, August 25, 2015 12:36 AM  
**To:** mayor@cityofflint.com  
**Cc:** McCarthy.Gina@epamail.epa.gov; r5 hotline@epa.gov; hedman.susan@epa.gov; Hyde.Tinka@epa.gov; Wyant, Dan (DEQ); Creal, William (DEQ); NRC@uscg.mil  
**Subject:** Water Emergency

Emergency Personnel and Honorable Officials:

**I am extremely concerned after being sent the following photo and this issue needs to be investigated ASAP -**



Flint tap water.

In 2014, Flint's emergency manager disconnected the city from the Detroit Water and Sewerage Department (DWSD) and started providing residents with water from the Flint River. Since that time, residents have been struggling to maintain access to a clean, safe drinking water supply.

Residents of Flint report having tap water with high levels of copper, lead, THMs (chemicals that result when chlorine mixes with organic matter), tin, lime and iron. The water is often brown or bluish-green in color and contains sediment. As a result, people are experiencing symptoms including hair loss, lead poisoning and diseases related to consuming high levels of copper (to name a few).

The Flint River clearly is not a safe, reliable source for the city's drinking water. It was as easy as pushing a button to disconnect from DWSD; it's time to push the button again, reconnecting Flint to DWSD and providing Flint residents with the clean, safe water they deserve.

Please reconnect Flint to the Detroit Water and Sewerage Department immediately and make water safe and clean for all.

Begin forwarded message:

Date: August 4, 2015 at 4:08:13 PM EDT  
From: "Lynna Kauckeck, Food & Water Watch" <act@fwwatch.org>  
Reply-To: "Lynna Kauckeck, Food & Water Watch" <act@fwwatch.org>  
To: Caleb Laieski <caleb\_m\_laieski@yahoo.com>  
Subject: Dangerously toxic drinking water



## **Residents of Flint, Michigan Have Dangerously Toxic Drinking Water**

### **Sign the Petition: Demand Clean, Safe Drinking Water for Flint!**

Dear Caleb,

It's hard to believe that in 2015, residents of an American town are being poisoned by their public water system.

About a year ago, Flint, Michigan residents were switched from getting water from the Detroit Water and Sewerage Department to getting water from the Flint River, all in an attempt to cut costs. **But this change has cost the people of Flint greatly.**

Sign the petition to tell the Flint City Council and Mayor to switch Flint back to Detroit's clean drinking water — it's as easy as pushing a button!

Flint residents like Melissa Mays are trying to get their story out nationally to bring more attention to their fight.

*In April 2014, a button was pushed that changed my life and thousands of others in Flint, Michigan. For over a year now, we have been drinking toxic water and suffering the severe health challenges that have come as a result.*

*Since Flint started providing us with water from the Flint River, my water has turned bluish-green from all the copper in the water, the levels of lead have quadrupled and we have been notified about high levels of TTHMs (chemicals that are formed when chlorine mixes with organic matter). And the pH of my water is 4, which means that it's as acidic as tomato juice!*

*Other neighbors have experienced brown water and have found traces of tin, lime and iron in their water. Members of my community have been reporting cases of lead poisoning, and many neighbors have reported that their hair is falling out because of our toxic water. Due to the high levels of copper in my water, I am suffering from osteoarthritis and bone spurs at the age of 36.*

**Access to safe drinking water is a human right. Demand that Mayor Walling and Flint City Council give the people of Flint clean, safe water!**

Like other Michigan cities, Flint is struggling financially. In 2014, Flint's emergency manager decided that, as a cost-saving measure, the city would stop buying clean, safe water from Detroit and start providing residents with water from the Flint River.

**But the Flint River experiment has not panned out.** The city has failed to adequately treat the water from the Flint River to make it safe to drink. Almost immediately after the switch, residents noticed changes in smell, color and taste of the water coming out of their taps, and tests showed high levels of bacteria that forced the city to issue boil advisories.

**Would you drink water  
with dangerous levels of  
lead and copper?**



Flint tap water.

**No One Should Have to  
Drink Toxic Water!**

To kill the bacteria, the city increased the amount of chlorine in the water, which resulted in the high levels of toxic trihalomethanes (TTHMs that Melissa mentions). Samples show levels of lead contamination in the water that's off the charts (likely due to Flint's inability to prevent lead from the old pipes from leaching into the water). A well-known neurotoxin, lead poisoning can have severe long-term impacts on children's developing brains.<sup>1</sup>

**It is abundantly clear that the Flint River is not a safe, reliable source for the city's drinking water. Sign the petition to tell Flint Mayor Walling and the Flint City Council to switch back to Detroit Water to ensure clean, safe drinking water for Flint.**

It was as easy as pushing a button to disconnect from Detroit's water service, it's time to push the button again to reconnect Flint to Detroit Water and provide Flint residents with the clean, safe water they deserve.

I am collecting petitions from people all over the country to deliver in person to the Flint City Council and Mayor at the end of August. I hope you'll help bring national attention to this issue by signing the petition to the Flint Mayor and City Council to give residents access to safe drinking water.

Thank you for taking action,

Lynna Kauchek  
Senior Organizer  
Food & Water Watch  
act(at)fwwatch(dot)org

---

1. Aging Pipes Are Poisoning America's Tap Water, *The Atlantic*, July 29, 2015.

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WASHINGTON, DC 20036 • TEL: (202) 683-2500

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**Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Sunday, July 26, 2015 12:35 PM  
**To:** Hollins, Harvey (GOV)  
**Subject:** FW: Need upate on lead / copper tests for Flint  
**Attachments:** DWSD-CorrosionControlStudy.pdf; Flint lead history.pdf; DWSD-Flint-1993-Lead-Letter.pdf

Harvey,

FYI, I will call you on Monday to discuss.

Dan Wyant, Director  
Department of Environmental Quality  
517-284-6700 (New Number)

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, July 24, 2015 4:18 PM  
**To:** Saxton, Thomas (Treasury); Muchmore, Dennis (GOV); Wyant, Dan (DEQ)  
**Subject:** FW: Need upate on lead / copper tests for Flint

Guys, here's an update and some clarification on the lead situation in Flint. Please limit this information to internal for now.

By the tenants of the federal statute, the city is in compliance for lead and copper. That aside, they have not optimized their water treatment (for the most part, this means adding phosphates to minimize the degree that the water Ph mobilizes lead and copper in people's home plumbing).

Compliance with the standard started with testing. A June-December run of tests (all in homes with lead in their premise plumbing) concluded in December. Another January – June round of sampling concluded last month. Everything checks out in terms of compliance, but now the next step is optimizing the water supply.

So, in about two weeks, DEQ will be sending a formal communication about the optimizing issue. The federal program has long timelines for action. A community water supplier gets 18 months to study the options, and two years thereafter to implement water system optimization measures.

My point: Conceivably, by the time we're halfway through the first timeline, the city will begin using a new water source with KWA ... and conceivably, the whole process starts all over again.

In terms of near-future issues, the bottom line is that residents of Flint do not need to worry about lead in their water supply, and DEQ's recent sampling does not indicate an eminent health threat from lead or copper. That said, anyone with lead pipes in their premise plumbing (this translates to tens of thousands of homes in our older urban centers, btw) should at least be aware that they have them, and to some limited degree that's going to impart minute parts per billion of lead in water no matter what. Its why nobody uses lead water pipes anymore.

The long version of this note is below. Let's connect next week. I'd like some thoughts about what more the state could be doing – most immediately, to convey the results of our testing and tell the story to the residents of Flint in an effort to quell some fears.

Thanks!

b

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**From:** Busch, Stephen (DEQ)

**Sent:** Friday, July 24, 2015 3:46 PM

**To:** Wurfel, Brad (DEQ)

**Cc:** Shekter Smith, Liane (DEQ); Wyant, Dan (DEQ); Pallone, Maggie (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)

**Subject:** RE: Need upate on lead / copper tests for Flint

Brad,

As we discussed, the City has completed the last round of monitoring (Jan 1 – June 30, 2015). The last samples came in about a week ago. We have made the compliance determination that the 90<sup>th</sup> percentile level is 11 parts per billion, which is below the Action Level Standard of 15 parts per billion (there is no Lead maximum contaminant level standard). The federal rule requires measuring lead levels in water from household plumbing materials to determine the corrosivity of the City's water in order to limit exposure.

I have provided a summary of Flint's lead compliance monitoring from the last 20+ years since this regulation started in 1991. The City of Flint itself has never had a 90<sup>th</sup> percentile level exceed the 15 part per billion action level. Sampling requirements look at the worst case plumbing materials. Samples must be collected in accordance with the regulatory requirements and criteria in order to be used for compliance determinations.

Because the City of Flint serves a population of over 50,000 they are required to have Fully Optimized Corrosion Control. While it is possible to meet the fully optimized requirement without additional treatment, based on their two rounds of sampling since switching to the Flint River, we have determined they did not meet the eligibility for this per the regulation. They now have to complete a study (within 18 months) and are then allowed a period of additional time (2 additional years) to install the selected treatment for Fully Optimized Corrosion Control in accordance with the regulatory requirements. This is what DWSD was required to do back in 1993 – 1997 (see attached letter and study). We are planning to suggest the City directly submit a treatment process to shorten the timeline to achieve full optimization. This letter is currently being drafted but won't be ready to mail out for another week.

Liane and I had a conference call with EPA region V in Chicago on Tuesday to go over all of this and they are in support of these next steps with the City.

The matter will be potentially further complicated when the City switches over to water from the Karegnondi Water Authority next year to re-evaluate the continuing requirement to fully optimize corrosion control.

The DEQ recognizes that there is has been no level of lead exposure determined to be safe, but again the regulation was developed to optimize water corrosivity to limit exposure and the City is following the regulatory requirements.

Lead is not coming from the Flint River or the City's Water Treatment Plant or the public distribution system. It is from lead service lines into homes and from plumbing materials and fixtures within the private property of the household.



As watermain are replaced within the City lead services associated with that section of watermain would be replaced in order to reconnect to City water. This would also place burden on the homeowner to pay for having the service line replumbed. However, since 2000 only 16 miles of the City's 500 miles of watermain have been replaced as they did not have the financial means to do so.

Let us know if there are questions or you need any additional information.

Stephen Busch, P.E.  
MDEQ Lansing District Coordinator  
Office of Drinking Water and Municipal Assistance  
Lansing and Jackson District Supervisor  
517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, July 24, 2015 12:09 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Wyant, Dan (DEQ); Pallone, Maggie (DEQ)  
**Subject:** Need upate on lead / copper tests for Flint

Guys, the Flint Ministers met with the Governor's office again last week. They also brought along some folks from the community – a college prof and a GM engineer – who imparted that 80 water tests in Flint have shown high lead levels.

Could use an upate on the January / June testing results, as well as recap of the December testing numbers, and any overview you can offer to edify this conversation.

Call me or email today if possible. Thanks!

b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713  
517-230-8006 cell

→ Director/ 2-1  
600 file

**Olszewski, Rosemarie (DEQ)**

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Wednesday, September 16, 2015 3:24 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Document for Review - Flint Water Plan Support  
**Attachments:** Additional Support for Flint Water Improvement Plan, 9.14.15.pdf

cc: Flint File

Please print all.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

---

**From:** Adamczyk, Lynne (GOV)  
**Sent:** Wednesday, September 16, 2015 3:19 PM  
**To:** Clayton, Stacie (GOV); Kennedy, Jordan (GOV); Rospond, Laurie (GOV); Brown, Eric (GOV); Dempkowski, Angela (Treasury); Pleyte, Beth (Treasury); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Grijalva, Nancy (DCH); Thelen, Mary Beth (DEQ); Doyle, Maureen (Treasury); Minix, Connie (DTMB)  
**Subject:** Document for Review - Flint Water Plan Support

Stacie, please have Harvey respond to this letter from Mayor Walling and send me a copy of the response letter.

Thanks,

Lynne

Lynne Adamczyk  
Executive Assistant  
Office of Governor Rick Snyder  
517-373-3400 (o)  
517-241-9412 (d)  
[adamczyk1@michigan.gov](mailto:adamczyk1@michigan.gov)



## CITY OF FLINT

Dayne Walling  
Mayor

September 14, 2015

The Honorable Rick Snyder  
Governor, State of Michigan  
P.O. Box 30013  
Lansing, MI 48909

RE: Call for Additional Support for Flint Water Improvement Plan

Dear Governor Snyder:

On behalf of the Flint community, I am writing with a renewed request for additional support to address Flint's water challenges to ensure that water is affordable and secure for everyone in Flint especially our vulnerable populations. I am asking for an additional \$30 million in funds for Flint's infrastructure and a new healthy homes initiative.

Significant progress has been made throughout this year to increase water safety and quality and I thank you for the involvement of your office, the Michigan Department of Environmental Quality, and the Michigan Department of Treasury. A majority of items in the Water Improvement Plan are completed or underway. Most importantly, Flint is now in compliance with the Safe Drinking Water Act due in large part to the installation of the new carbon filter. The infrastructure systems are being made more secure and efficient through the State grants. Now the City is committed to following the recommendation of the Michigan Department of Environmental Quality to optimize the treatment process, reduce corrosion and further minimize risks from lead.

The need to accelerate the City's capital improvement investments remains and has been further increased by the continued financial stress and legal issues. Previously I requested support for replacement or forgiveness of payment to the Drinking Water Revolving Loan Fund due to Flint's status as a distressed community and the gap in funding in the adopted capital improvement plan. I understand that the existing federal law does not allow the existing Drinking Water Revolving Loans that Flint is carrying to be forgiven in retrospect but the need still exists. Flint owes approximately \$20 Million. One solution is for the State to grant a new \$20 Million that is designed as forgivable from the start. Another solution is to provide

for response FYI → HH/JA/DP/EB  
workman/Sarkis  
B. Wuyet  
M. Pallone  
Lyon/Wyant/  
Khouri  
J. Roberts

The Honorable Rick Snyder  
September 14, 2015  
Page 2

equivalent funding through an expansion of the grant program to Michigan's Financially Distressed Cities, Villages and Townships with a supplemental budget amendment in cooperation with the State Legislature.

The community's heightened concern about lead leeching into the water from old service lines and home plumbing also needs to be addressed. We know that lead is an environmental contaminant and there have been many programs in place over the years to address sources in paint and pipes. Flint needs a new healthy homes initiative specifically focused on lead in water with \$10 Million to start the process of replacing service lines for the most vulnerable households. Regardless of the source and treatment of Flint's water, this long term threat of lead in pipes needs to be removed in the interest of public health.

My approach continues to be to work with you and your appointed officials, State Senator Ananich, State Representatives Phelps and Neeley, Congressman Kildee, community groups, businesses, churches, foundations, the Flint City Council, and all of the City of Flint and State and Federal government personnel. We need every available expert and resource to address Flint's water problems.

Flint's safety is my top priority. Just as the City and State have worked together on public safety, we need additional support for fixing the water problems. We need \$30 Million in new funds to repair and update the city-wide infrastructure and to assist households in becoming lead-free. The entire Flint community deserves sustainable, safe, secure and affordable water now and into the future. Thank you for the consideration Governor and I look forward to future discussions.

Sincerely,



Dayne Walling  
Mayor, City of Flint

CC: Flint City Council President Joshua Freeman; Congressman Dan Kildee; State Senator Jim Ananich; State Representative Sheldon Neeley; State Representative Phil Phelps; EPA Regional Administrator Dr. Susan Hedman; Chief of Staff Dennis Muchmore



STATE OF MICHIGAN  
EXECUTIVE OFFICE  
LANSING

RICK SNYDER  
GOVERNOR

BRIAN CALLEY  
LT. GOVERNOR

**CONTACTS:**

Sara Wurfel or Dave Murray, Governor's Office  
517-335-6397  
Terry Stanton, Department of Treasury  
517-335-2167

**FOR IMMEDIATE RELEASE**

September 16, 2015

## **Gov. Rick Snyder awards Flint \$2 million in Distressed Cities grants for water system infrastructure improvements**

*Funding to be used for leak detection, waste incinerator replacement*

LANSING, Mich. — Gov. Rick Snyder today awarded Flint \$2 million in grants for water system infrastructure improvements, part of an overall \$8 million plan to help cities through the Financially Distressed Cities, Villages, and Townships Grant Program.

Flint is among six municipalities receiving grants through the program. The city will use the funding to detect leaks in its water lines and replace its Water Pollution Control Facility Incinerator.

"There are opportunities for the state government to assist Flint city leaders as they address issues related to the city's water system," Snyder said. "These grants will help recovering cities improve public services and infrastructure, improving the quality of life for all residents."

The grants to Flint were announced today at the Haskell Community Center by Harvey Hollins, director of the state's Office of Urban Initiatives and Wayne Workman, the state's deputy treasurer. They were joined by Dan Wyant, director of the Michigan Department of Environmental Quality, Flint Emergency Manager Jerry Ambrose, Mayor Dayne Walling, state Senate Minority Leader Jim Ananich, state Reps. Sheldon Neeley and Phil Phelps.

Flint was awarded \$900,000 to allow the city to hire a contractor to perform a leak detection survey of the city water lines. The city will receive a map of leak locations and an assessment of leak severity, allowing the city to prioritize leak repair. The project also covers the expense of conducting a water pipe line wall thickness condition assessment on a portion of the city's pipes. The assessment will guide the city's water main replacement program.

The city also was awarded \$1.1 million to shut down its current Water Pollution Control Facility incinerator and replace it with new facilities which will allow for the disposal of waste in landfills. The existing facilities are not up to federal Environmental Protection Agency standards.

Municipalities are eligible for the grants if they are experiencing one or more conditions indicative of "probable financial stress," as defined by Public Act 436 of 2012, the Local Financial Stability and Choice Act.

Under the grant program, funding may be used to pay for specific projects, services, or strategies that move a city, village, or township toward financial stability. There was \$8 million appropriated for the program with a \$2 million cap, per local unit.

##

**\* Thelen, Mary Beth (DEQ)**

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**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, September 29, 2015 12:06 PM  
**To:** Wyant, Dan (DEQ); Muchmore, Dennis (GOV); Lyon, Nick (DCH); Hollins, Harvey (GOV); Scott, Allison (GOV)  
**Cc:** Wurfel, Sara (GOV); Lasher, GERALYN (DCH); Wurfel, Brad (DEQ); Emmitt, Beth (GOV); Clement, Elizabeth (GOV)  
**Subject:** RE: Proposed Press Conference on Flint Drinking Water  
**Importance:** High

**Revised Updates from yesterday's e-mail** to Dennis Muchmore, Harvey Hollins, and Nick Lyons. I have added Allison Scott to give to the Governor for the 1:00 meeting today.  
Thank you.

=====

Per the ongoing issues in Flint concerning their drinking water, I would offer the following recommendations. Let's discuss.

#### **Recommendation**

Press Conference in Flint - Friday, October 2, 1:30 - Flint

#### **Participants**

Mayor of Flint  
Dan Wyant - Michigan Department of Environmental Quality  
Nick Lyon - Department of Community Health  
Susan Hedman - Region 5 Administrator or EPA  
Harvey Hollins - Governor's office  
Local Public Health Department

#### **Announcement**

Federal - State - Local action plan to address Flint Drinking Water

1. Chief Medical Officer speaking with Hurley.
2. All Flint schools water will immediately be tested to ensure that drinking water is safe.
3. Advisories will be disseminated recommending citizens flush your cold water pipes, use only water from the cold water tap for drinking, cooking and especially for making baby formula.
4. Implementation of fully optimized corrosion controls in the Flint drinking water system.
5. Expanded water testing of at risk properties.
6. Offer water testing at no cost to Flint residents to assure water is safe.

*Recommendation  
could be  
submitted*

7. Convene a safe drinking water " Technical Review Advisory" to ensure best technology, practices and science is being utilized, including EPA's expertise and assistance from their Office of Research and Development.
8. Offer bottled water and premixed formula if test results indicate high levels of lead.
9. Accelerate water system improvements to address replacement of lead service lines.

Dan Wyant, Director  
Department of Environmental Quality  
517-284-6700 (New Number)



**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, November 05, 2015 7:57 AM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Flint MI: LCR Enforcement Issues  
**Attachments:** image003.png; ATT00001.htm; Flint LCR for FOIA 6429-15 (5).pdf; ATT00002.htm; FOIA 15-585 Part 2 55pgs (12).pdf; ATT00003.htm

Please print.

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Monday, September 21, 2015 11:56 AM  
**To:** Busch, Stephen (DEQ); Benzle, Richard (DEQ); Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Wyant, Dan (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: Flint MI: LCR Enforcement Issues

EPA just shared the attached

---

**From:** Fortin, Denise [<mailto:Fortin.Denise@epa.gov>]  
**Sent:** Monday, September 21, 2015 11:44 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** Fwd: Flint MI: LCR Enforcement Issues

Sent from my iPhone

Begin forwarded message:

**From:** "Henry, Timothy" <[henry.timothy@epa.gov](mailto:henry.timothy@epa.gov)>  
**To:** "Fortin, Denise" <[Fortin.Denise@epa.gov](mailto:Fortin.Denise@epa.gov)>  
**Subject:** FW: Flint MI: LCR Enforcement Issues

Tim Henry  
Deputy Director, Water Division  
U.S. EPA (W-15J)  
77 W. Jackson Blvd., Chicago, IL 60604-3590  
Phone: 312.886.6107 Fax: 312.692.2578

---

**From:** Damato, Nicholas  
**Sent:** Monday, September 21, 2015 7:56 AM  
**To:** Henry, Timothy; Hyde, Tinka  
**Subject:** FW: Flint MI: LCR Enforcement Issues  
**Importance:** High

Tim & Tinka,

Miguel forwarded the email below from Marc Edwards. Miguel then called because he wanted Tinka to have a heads up especially on the info in the ACLU video and didn't want her blindsided with the content -- it should be reviewed carefully. Tom, Rita, Heather, Jennifer, Miguel & I will be having a call with ORC & OECA this morning on Marc's email.

Nick

**From:** Deltoral, Miguel  
**Sent:** Monday, September 21, 2015 6:52 AM  
**To:** Damato, Nicholas  
**Subject:** Fw: Flint MI: LCR Enforcement Issues  
**Importance:** High

Just noticed you weren't copied on this...

Miguel A. Del Toral  
Regulations Manager  
U.S. EPA R5 GWDWB  
77 West Jackson Blvd, (WG-15J)  
Chicago, IL 60604  
Phone: (312) 886-5253

---

**From:** Marc Edwards <[edwardsm@vt.edu](mailto:edwardsm@vt.edu)>  
**Sent:** Sunday, September 20, 2015 09:29 PM  
**To:** Schock, Michael; Lytle, Darren; [kempic.jeffrey@epa.gov](mailto:kempic.jeffrey@epa.gov); Burneson, Eric; [demarco.carol@epa.gov](mailto:demarco.carol@epa.gov); Murphy, Thomas; Shoven, Heather; Deltoral, Miguel  
**Subject:** Flint MI: LCR Enforcement Issues

Mike, Darren, Jeff, Eric, Carol and Miguel and R5 MI/Enforcement personnel (as listed on the R5 webpage).

In this e-mail, I am making you aware of what we know regarding the Flint lead situation.

1) They do not have an approved lead sampling pool. Only 13 of the lowest lead sampled homes from 2014, were resampled in 2015.

The homes sampling high in 2014, were not asked to be resampled.

At best, their program is sending out sampling bottles at random across the city.

2) This message exemplifies the type of site selection, that they are doing to satisfy their high risk LCR monitoring pool site.

That is, none. They are not even hiding it.

<http://www.flintneighborhoodsunited.org/drinking-water-testing/>.

3) Furthermore, in a video now on the ACLU website, at the end of the interview, Mike Glasgow (Flint LCR program) notes what is perfectly obvious from looking at the MDEQ FOIA materials.

*"we threw out bottles everywhere just to collect as many as we can, just to hit our number, and we just turn in every result we get in."*

Moreover, they do not have the records to show the homes have lead pipe. *"we are still looking for the records"*

See video here. Start at 4 minutes and 13 seconds to see the admission. <https://vimeo.com/139882021>

4) On top of that, according to my count, MDEQ covered up no fewer than 5 violations in the 2015 sample round. These include:

a) Technical violation in that what they now stamp as the "draft" report (attached) is late (the signed date is 7/28/2015).

It was due 7/10/2015. The final "revised" report is dated 8/20/2015 (also attached), which is 40 days late.

b) Although 87 sites from 2014 were not resampled, no written justification for the site changes was provided in the FOIA materials, and this is required by law.

The statement given today by Flint, that residents were not resampled because they did not want to participate, is contradicted by my conversations with residents.

c) In the original 71 samples Flint submitted late, the lead 90%ile action level was exceeded. MDEQ took the initiative to invalidate 2 samples, dropping Flint below the Action Level.

Flint never requested in writing that any of the samples be invalidated (see the comments written in the box of page 1, FOIA 15-585).

Mike Glasgow says that the 2 high samples were deleted based on the conference call. Only the high samples were scrutinized for meeting the sample pool criteria.

No low samples were investigated. I have the e-mails.

4) The "Draft 7/28/2015" and "revised 8/20/2015" LCR reports, on page 1, check boxes that note Tier 1 sites are not used. MDEQ asks no questions about that. In video Mike admits he has no knowledge of what sites actually have lead pipe or not.

5) Flint did not achieve the minimum number of samples as determined before the sampling round. In his e-mail Mike Glasgow (see below, and see FLINT LCR FOR FOIA...pdf) acknowledges this will be a technical violation. The draft LCR clearly indicates that the minimum was not achieved. MDEQ responds "we are discussing options" to handle this technical violation. In the August 20<sup>th</sup> revised final report, even this technical violation magically disappears (see comments box on page 1....).

-----  
To: 'Michael Glasgow'  
Cc: Brent Wright  
Subject: RE: lead/copper

we are discussing options regarding this and future rounds of monitoring and will get back with you.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

From: Michael Glasgow [mailto:[mglasgow@cityoflnt.com](mailto:mglasgow@cityoflnt.com)]  
Sent: Thursday, July 09, 2015 2:19 PM  
To: Rosenthal, Adam (DEQ)  
Cc: Brent Wright  
Subject: Re: lead/copper

Adam,

I just sent the last of the samples to the lab today. Unfortunately we did not reach 100 samples. I believe the count I have is 76 total. Since we have had a few more hits this round, we are going to continue to solicit samples for our own informational purposes. I am disappointed in the turnout of sampling, we distributed close to 200 sample bottles. With this monitoring violation will we be required to collect another round of 100

DEPARTMENT OF ENVIRONMENTAL QUALITY  
OF DRINKING WATER AND MUNICIPAL ASSISTANCE  
AND COPPER REPORT AND  
CONSUMER NOTICE OF LEAD RESULT  
CERTIFICATE FOR COMMUNITY WATER SUPPLY

DRAFT



Issued under authority of 1976 PA 399, MCL 325.1001 *et al.*, and Administrative Rules, as amended.  
Failure to submit this information is a violation of Act 399 and may subject the water supply to enforcement penalties.

Administrative Rule R 325.10710d requires water supplies to report lead and copper monitoring information within 10 days after the end of the monitoring period. This form may be used to meet this requirement. Submit the information to the appropriate Department of Environmental Quality (DEQ) district office. For district office addresses, visit [www.michigan.gov/deq](http://www.michigan.gov/deq) and click on Locations.

1. Water Supply Name: City of Flint Water Plant  
2. County: Genesee 3. WSSN: 2310  
4. Population: 99,763 5. Monitoring Period: From: 1/1/15 To: 6/30/15  
6. Minimum # of Samples Required: 10060 7. # of Samples Taken: 11769  
8. Name of Certified Laboratory: DEQ Drinking Water Laboratory

9. SAMPLE CRITERIA:

Yes	No	Explain No responses in Comments block.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. Are the same sampling points used as in the previous monitoring period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. Are all samples from Tier 1 sites?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c. Are all samples from Tier 1, 2, or 3 sites giving Tier 1 priority?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d. If no Tier 1, 2, or 3 sites are available, do all sites have plumbing materials commonly found at other locations in the system?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e. Is the minimum number of lead service line samples taken (when applicable)?

For more information see instructions paragraph 11, subparagraph "Sample Category."

Comments:  
A total of 175 sample bottles and instructions were distributed to city residents. We are continuing to solicit samples due to the fact that we did not reach the minimum number for this monitoring period.

*Lead service line majority (30,000?)*

10. NAME:

Name: Michael Glasgow  
Title: Utilities Administrator Phone: 810-766-7135 Date: 7/28/2015

11. TAP SAMPLING DATA: (Use additional sheets as needed)

DRAFT

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumb-ing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2205 Flusing Rd	2/15/15	1	L	C,P	N.D.	0.13	54663
212 Browning Ave.	2/18/15	1	L	P	104	N.D.	54945
1809 Stevenson St.	2/10/15	1	L	P	10	N.D.	54956
4202 Custer Ave.	3/4/15	1	L	C,P	6	0.27	56223
401 E. Newall St.	3/2/15	1	L	P	5	N.D.	56225
215 Browning Ave. <i>ok</i>	3/21/15	1	L	C,P	N.D.	0.16	56226
2615 Trumbull Ave.	2/27/15	1	L	C,P	3	N.D.	56227
201 Browning Ave. <i>ok</i>	3/5/15	1	L	P	N.D.	N.D.	56228
1224 Decker St.	3/17/15	1	L	C,P	13	0.10	57728
1220 Decker St.	3/17/15	1	L	P	4	N.D.	57730
1379 Washington Ave.	3/19/15	1	L	P	8	N.D.	57731
1383 Washington Ave.	3/19/15	1	L	C,P	6	0.17	57734
1372 Washington Ave.	3/19/15	1	L	C,P	2	0.14	57733
1367 Washington Ave.	3/17/15	1	L	P	1	N.D.	57735
1701 Marquette Dr.	3/14/15	1	L	C,P	1	0.19	57736
778 Bundy Ave.	3/24/15	1	L	P	N.D.	N.D.	58413
3714 Beecher Rd.	3/24/15	1	L	C	2	0.52	58414
1016 Ingleside Ave.	4/9/15	1	L	C,P	7	0.07	59749
1818 Rock Creek Ln.	4/8/15	1	L	C,P	3	0.11	59750
3010 Cheyenne St.	4/3/15	1	L	C,P	5	0.10	59751

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

## 11. TAP SAMPLING DATA: (Use additional sheets as needed)

DRAFT

Water Supply Name/County City of Flint Water Plant

WSSN 2310

## RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumbing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2806 Mountain Ave.	4/15/15	1	L	P	N.D.	N.D.	60546
2020 Crooked Ln.	4/24/15	1	L	C,P	5	0.10	61845
310 E. Moore St.	4/22/15	1	L	P	5	N.D.	61846
631 Alvord Ave.	5/6/15	1	L	P	42	N.D.	63410
216 Browning Ave.	5/7/15	1	L	C,P	22	0.31	63411
3714 Beecher Rd.	5/14/15	1	L	C,P	8	0.15	64283
<del>625 S. Grand Traverse</del>	<del>5/18/15</del>	<del>5</del>	<del>L</del>	<del>C,P</del>	<del>20</del>	<del>0.14</del>	<del>64284</del> X
912 Lexington Ave.	5/15/15	1	L	P	6	N.D.	64285
349 Robbie Ln.	5/31/15	1	L	P	2	N.D.	67428
353 Robbie Ln.	5/30/15	1	L	C,P	5	0.11	67427
341 Robbie Ln.	5/31/15	1	L	C,P	3	0.05	67426
328 Robbie Ln.	5/30/15	1	L	C,P	2	0.09	67425
357 Robbie Ln.	5/31/15	1	L	C	3	0.20	67424
344 Robbie Ln.	5/31/15	1	L	C,P	4	0.11	67423
1807 Oren Ave.	6/8/15	1	L	P	21	N.D.	68023
421 Lyon St.	6/14/15	1	L	C,P	7	0.14	68788
1528 Delaware Ave.	6/12/15	1	L	P	3	N.D.	68789
3811 Brentwood Dr.	6/14/15	1	L	P	42	N.D.	68790
1615 S. Franklin Ave.	6/14/15	1	L	P	N.D.	N.D.	68791
853 E. 7 <sup>th</sup> St.	6/12/15	1	L	C,P	7	0.07	68792

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

## TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumbing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
1150 Woodside Dr.	6/14/15	1	L	P	29	N.D.	68793
547 Copernan Blvd.	6/14/15	1	L	P	18	N.D.	68794
920 Stocker Ave.	6/21/15	1	L	P	1	N.D.	69622
742 Lincoln Ave.	6/19/15	1	L	P	2	N.D.	69623
3517 Bennett Ave.	6/24/15	1	L	C,P	3	0.06	69624
1730 Overhill Dr.	6/22/15	1	L	C,P	1	0.08	69625
2117 Stanford Ave.	6/23/15	1	L	C,P	5	0.08	69626
2432 Beta Ln.	6/21/15	1	L	P	N.D.	N.D.	69627
2023 Miller Rd.	6/21/15	1	L	C,P	3	0.06	69628
721 East St. Apt #2	6/25/15	4	L	C,P	10	0.16	70222
3814 Whitter	6/25/15	1	L	P	2	N.D.	70223
3120 Norwood	6/24/15	1	L	P	5	N.D.	70224
2122 Pierce St.	6/21/15	1	L	P	2	N.D.	70225
3521 Bennett Ave.	6/25/15	1	L	P	3	N.D.	70226
1602 Raspberry Ln.	6/24/15	1	L	P	N.D.	N.D.	70227
1809 Lynbrook	6/26/15	1	L	P	3	N.D.	70228
2112 Sherff	6/24/15	1	L	C,P	9	0.06	70229
1205 Blanchard Ave.	6/24/15	1	L	C,P	11	0.05	70230
860 Schafer St.	6/26/15	1	L	C,P	N.D.	0.08	70231
2110 Flushing Rd.	6/30/15	1	L	C	N.D.	0.10	71158

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

2.0



11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumb-Ing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2300 Flushing Rd.	6/29/15	1	L	C	3	0.28	71159
2130 Flushing Rd.	6/28/15	1	L	C,P	6	0.05	71160
2202 Flushing Rd.	6/29/15	1	L	C,P	2	0.06	71162
2429 Flushing Rd.	6/30/15	1	L	C,P	N.D.	0.06	71163
4013 Brownell Blvd.	6/29/15	1	L	C,P	2	0.08	71165
2414 Flushing Rd.	6/30/15	1	L	P	N.D.	N.D.	71166
1914 Penbrook Ln	6/29/15	1	L	P	2	N.D.	71167
3901 Leedra St.	6/26/15	1	L	P	N.D.	N.D.	71168
3142 McClure	6/26/15	1	L	P	3	N.D.	71169
2114 Flushing Rd.	6/30/15	1	L	C,P	5	0.05	71170
709 Frost St.	6/30/15	1	L	P	2	N.D.	72033

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

# Consumer Notice of Lead Result in Drinking Water

DRAFT

Water Supply Name: City of Flint  
County: Genesee WSSN: 2310  
Sample Location: 401 E. Newall St. Date Sampled: 3/2/15

Thank you for participating in the lead and copper monitoring of drinking water. The levels of lead and copper found at your location are in the table below.

Key to Table	Contaminant	AL	MCLG	Your Result
<b>Action Level (AL):</b> The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. <b>Maximum Contaminant Level Goal (MCLG):</b> The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. ppb: parts per billion or micrograms per liter.	Lead (ppb)	15	0	5
	Copper (ppb)	1300	1300	Not Detected

Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and it can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

To reduce exposure to lead in drinking water:

- *Run your water to flush out lead.* Run the water until it becomes cold.
- *Use cold water for cooking and preparing baby formula.* Do not cook with or drink water from the hot water tap; lead dissolves more easily in hot water.
- *Do not boil water to remove lead.* Boiling water will not reduce lead levels.
- *Look for alternative sources or treatment of water.* If your lead result is above 15 ppb, you may want to consider purchasing bottled water or a water filter. Read the package to be sure the filter is approved to reduce lead or contact NSF International at 800-NSF-8010, or [www.nsf.org](http://www.nsf.org) for information on performance standards for water filters.
- *Identify if your plumbing fixtures contain lead.* New faucets, fittings, and valves, may contain up to 8 percent lead including those advertised or labeled as "lead-free" and may contribute lead to drinking water. Consumers should be aware of this when choosing fixtures and take appropriate precautions.

Although the primary sources of lead exposure for most children are deteriorating lead-based paint, lead-contaminated dust, and lead-contaminated soil, the U.S. EPA estimates that 10 to 20 percent of human exposure to lead may come from drinking water.

For more information, contact us at: City of Flint Water Plant (810) 787-6537

For more information on reducing lead exposure around your home and the health effects of lead, visit the U.S. EPA's Web site at [www.epa.gov/lead](http://www.epa.gov/lead), call the National Lead Information Center at 800-424-LEAD, or contact your health care provider.

## Certification:

I certify that this public water supply has provided the consumer notice of lead result to persons served at each of the taps that was tested, either by mail or by another method approved by the DEQ, within 30 days of knowing the result. The Notice includes required content.

  
Signature

UTILITIES ADMINISTRATOR  
Title

WSSN: 2310

3/2/15  
Date Sent to Consumer

Reminder to water supplier: Complete this certification on only one (1) example copy of a notice sent to a consumer and submit it to the DEQ.

**Rosenthal, Adam (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Monday, August 03, 2015 9:57 AM  
**To:** 'Michael Glasgow'  
**Subject:** RE: PbCu Cert form

Morning Mike, I also need copies of all 68 consumer notices. I have 1 from 401 E. Newall St., so 67 more.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityoffilint.com>]  
**Sent:** Friday, July 31, 2015 10:28 AM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Re: PbCu Cert form

Adam,

Here is the lead & copper report. I have also sent a hard copy out via USPS.

On Thu, Jul 30, 2015 at 9:33 AM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Morning Mike, I'm preparing the 90<sup>th</sup> percentile letter and I need your lead copper certification form with the cert of notification to the customers. What I have are 68 results that are routine from 1/1 – 6/30/15. The link below is for the form if you don't have one.

[http://www.michigan.gov/deq/0,4561,7-135-3313\\_3675\\_3691-61640--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3691-61640--,00.html)

thanks,

Adam Rosenthal, EQA

MDEQ – Office of Drinking Water and Municipal Assistance

Lansing District – Constitution Hall 1SW

PO Box 30242

Lansing, MI 48909

517-284-6644

fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:

[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

--

Mike Glasgow  
Utilities Administrator  
City of Flint  
1101 S. Saginaw St.  
Flint, MI 48502  
(810)766-7135 ext. 2602

## **Rosenthal, Adam (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Friday, July 10, 2015 11:28 AM  
**To:** 'Michael Glasgow'  
**Cc:** Brent Wright  
**Subject:** RE: lead/copper

we are discussing options regarding this and future rounds of monitoring and will get back with you.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Thursday, July 09, 2015 2:19 PM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright  
**Subject:** Re: lead/copper

Adam,

I just sent the last of the samples to the lab today. Unfortunately we did not reach 100 samples. I believe the count I have is 76 total. Since we have had a few more hits this round, we are going to continue to solicit samples for our own informational purposes. I am disappointed in the turnout of sampling, we distributed close to 200 sample bottles. With this monitoring violation will we be required to collect another round of 100 samples?

Also, I have attached a copy of our June bromate test results.

On Thu, Jul 9, 2015 at 9:55 AM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Morning Mike, do you have a count on how many lead/copper samples were turned in? I know they all haven't been run at the lab yet, but if I can verify how many there will be, that would be good. So far I have 70 results and the City is below the AL for lead – current 90<sup>th</sup> = 13 ppb. All the copper results are below.

thanks,

Adam Rosenthal, EQA

MDEQ – Office of Drinking Water and Municipal Assistance

Lansing District – Constitution Hall 1SW

PO Box 30242

Lansing, MI 48909

517-284-6644

fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:

[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

—  
Mike Glasgow  
Utilities Administrator  
City of Flint  
1101 S. Saginaw St.  
Flint, MI 48502  
(810)766-7135 ext. 2602

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE  
**LEAD AND COPPER REPORT AND  
CONSUMER NOTICE OF LEAD RESULT  
CERTIFICATE FOR COMMUNITY WATER SUPPLY**



Issued under authority of 1976 PA 399, MCL 325.1001 *et al.*, and Administrative Rules, as amended.  
Failure to submit this information is a violation of Act 399 and may subject the water supply to enforcement penalties.

Administrative Rule R 325.10710d requires water supplies to report lead and copper monitoring information within 10 days after the end of the monitoring period. This form may be used to meet this requirement. Submit the information to the appropriate Department of Environmental Quality (DEQ) district office. For district office addresses, visit [www.michigan.gov/deq](http://www.michigan.gov/deq) and click on Locations.

1. Water Supply Name: City of Flint Water Plant  
2. County: Genesee 3. WSSN: 2310  
4. Population: 99,763 5. Monitoring Period: From: 1/1/15 To: 6/30/15  
6. Minimum # of Samples Required: 60 7. # of Samples Taken: 69  
8. Name of Certified Laboratory: DEQ Drinking Water Laboratory

9. SAMPLE CRITERIA:

Yes	No	Explain No responses in Comments block.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. Are the same sampling points used as in the previous monitoring period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. Are all samples from Tier 1 sites?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c. Are all samples from Tier 1, 2, or 3 sites giving Tier 1 priority?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d. If no Tier 1, 2, or 3 sites are available, do all sites have plumbing materials commonly found at other locations in the system?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e. Is the minimum number of lead service line samples taken (when applicable)?

Comments: Revised report after conference call with DEQ staff. Two samples were removed from list for not meeting sample criteria, and due to population the number of samples required was reduced to 60.

10. NAME:

Name: Michael Glasgow

Title: Utilities Administrator Phone: 810-766-7135 Date: 8/20/2015

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumb-ing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2205 Flusing Rd	2/15/15	1	L	C,P	N.D.	0.13	54663
1809 Stevenson St.	2/10/15	1	L	P	10	N.D.	54956
4202 Custer Ave.	3/4/15	1	L	C,P	6	0.27	56223
401 E. Newall St.	3/2/15	1	L	P	5	N.D.	56225
215 Browning Ave.	3/21/15	1	L	C,P	N.D.	0.16	56226
2615 Trumbull Ave.	2/27/15	1	L	C,P	3	N.D.	56227
201 Browning Ave.	3/5/15	1	L	P	N.D.	N.D.	56228
1224 Decker St.	3/17/15	1	L	C,P	13	0.10	57728
1220 Decker St.	3/17/15	1	L	P	4	N.D.	57730
1379 Washington Ave.	3/19/15	1	L	P	8	N.D.	57731
1383 Washington Ave.	3/19/15	1	L	C,P	6	0.17	57734
1372 Washington Ave.	3/19/15	1	L	C,P	2	0.14	57733
1367 Washington Ave.	3/17/15	1	L	P	1	N.D.	57735
1701 Marquette Dr.	3/14/15	1	L	C,P	1	0.19	57736
778 Bundy Ave.	3/24/15	1	L	P	N.D.	N.D.	58413
3714 Beecher Rd.	3/24/15	1	L	C	2	0.52	58414
1016 Ingleside Ave.	4/9/15	1	L	C,P	7	0.07	59749
1818 Rock Creek Ln.	4/6/15	1	L	C,P	3	0.11	59750
3010 Cheyenne St.	4/3/15	1	L	C,P	5	0.10	59751
2606 Mountain Ave.	4/15/2015	1	L	P	N.D.	N.D.	60546

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				



11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumbing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2020 Crooked Ln.	4/24/15	1	L	C,P	5	0.10	61845
310 E. Moore St.	4/22/15	1	L	P	5	N.D.	61846
631 Alvord Ave.	5/6/15	1	L	P	42	N.D.	63410
216 Browning Ave.	5/7/15	1	L	C,P	22	0.31	63411
3714 Beecher Rd.	5/14/15	1	L	C,P	8	0.15	64283
912 Lexington Ave.	5/15/15	1	L	P	6	N.D.	64285
349 Robbie Ln.	5/31/15	1	L	P	2	N.D.	67428
353 Robbie Ln.	5/30/15	1	L	C,P	5	0.11	67427
341 Robbie Ln.	5/31/15	1	L	C,P	3	0.05	67426
328 Robbie Ln.	5/30/15	1	L	C,P	2	0.09	67425
357 Robbie Ln.	5/31/15	1	L	C	3	0.20	67424
344 Robbie Ln.	5/31/15	1	L	C,P	4	0.11	67423
1807 Oren Ave.	6/8/15	1	L	P	21	N.D.	68023
421 Lyon St.	6/14/15	1	L	C,P	7	0.14	68788
1528 Delaware Ave.	6/12/15	1	L	P	3	N.D.	68789
3811 Brentwood Dr.	6/14/15	1	L	P	42	N.D.	68790
1615 S. Franklin Ave.	6/14/15	1	L	P	N.D.	N.D.	68791
853 E. 7th St.	6/12/15	1	L	C,P	7	0.07	68792
1150 Woodside Dr.	6/14/15	1	L	P	29	N.D.	68793
547 Copeman Blvd.	6/15/14	1	L	P	18	N.D.	68794

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumb-ing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2114 Flushing Rd.	6/30/15	1	L	P	5	0.05	71170
709 Frost St.	6/30/15	1	L	P	2	N.D.	72033
920 Stocker Ave.	6/21/15	1	L	P	1	N.D.	69622
742 Lincoln Ave.	6/19/15	1	L	P	2	N.D.	69623
3517 Bennett Ave.	6/24/15	1	L	C,P	3	0.06	69624
1730 Overhill Dr.	6/22/15	1	L	C,P	1	0.08	69625
2117 Stanford Ave.	6/23/15	1	L	C,P	5	0.08	69626
2432 Beta Ln.	6/21/15	1	L	P	N.D.	N.D.	69627
2023 Miller Rd.	6/21/15	1	L	C,P	3	0.06	69628
721 East St. Apt #2	6/25/15	4	L	C,P	10	0.16	70222
3814 Whitter	6/25/15	1	L	P	2	N.D.	70223
3120 Norwood	6/24/15	1	L	P	5	N.D.	70224
2122 Pierce St.	6/21/15	1	L	P	2	N.D.	70225
3521 Bennett Ave.	6/25/15	1	L	P	3	N.D.	70226
1602 Raspberry Ln.	6/24/15	1	L	P	N.D.	N.D.	70227
1809 Lynbrook	6/26/15	1	L	P	3	N.D.	70228
2112 Sherff	6/24/15	1	L	C,P	9	0.06	70229
1205 Blanchard Ave.	6/24/15	1	L	C,P	11	0.05	70230
860 Schafer St.	6/26/15	1	L	C,P	N.D.	0.06	70231
2110 Flushing Rd.	6/30/15	1	L	C	N.D.	0.10	71158

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumbing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2300 Flushing Rd.	6/29/15	1	L	C	3	0.28	71159
2130 Flushing Rd.	6/28/15	1	L	C,P	6	0.05	71160
2202 Flushing Rd.	6/29/15	1	L	C,P	2	0.06	71162
2429 Flushing Rd.	6/30/15	1	L	C,P	N.D.	0.06	71163
4013 Brownell Blvd.	6/29/15	1	L	C,P	2	0.08	71165
2414 Flushing Rd.	6/30/15	1	L	P	N.D.	N.D.	71166
1914 Penbrook Ln	6/29/15	1	L	P	2	N.D.	71167
3901 Leedra St.	6/26/15	1	L	P	N.D.	N.D.	71168
3142 McClure	6/26/15	1	L	P	3	N.D.	71169

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE  
**LEAD AND COPPER REPORT AND  
CONSUMER NOTICE OF LEAD RESULT  
CERTIFICATE FOR COMMUNITY WATER SUPPLY**



Issued under authority of 1976 PA 399, MCL 325.1001 *et al.*, and Administrative Rules, as amended.  
Failure to submit this information is a violation of Act 399 and may subject the water supply to enforcement penalties.

Administrative Rule R 325.10710d requires water supplies to report lead and copper monitoring information within 10 days after the end of the monitoring period. This form may be used to meet this requirement. Submit the information to the appropriate Department of Environmental Quality (DEQ) district office. For district office addresses, visit [www.michigan.gov/deq](http://www.michigan.gov/deq) and click on Locations.

1. Water Supply Name: City of Flint Water Plant  
2. County: Genesee 3. WSSN: 2310  
4. Population: 99,763 5. Monitoring Period: From: 1/1/15 To: 6/30/15  
6. Minimum # of Samples Required: 100 7. # of Samples Taken: 71  
8. Name of Certified Laboratory: DEQ Drinking Water Laboratory

9. SAMPLE CRITERIA:

Yes	No	Explain No responses in Comments block.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. Are the same sampling points used as in the previous monitoring period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. Are all samples from Tier 1 sites?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c. Are all samples from Tier 1, 2, or 3 sites giving Tier 1 priority?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d. If no Tier 1, 2, or 3 sites are available, do all sites have plumbing materials commonly found at other locations in the system?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e. Is the minimum number of lead service line samples taken (when applicable)?

For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

Comments:  
A total of 175 sample bottles and instructions were distributed to city residents. We are continuing to solicit samples due to the fact that we did not reach the minimum number for this monitoring period.

10. NAME:

Name: Michael Glasgow  
Title: Utilities Administrator Phone: 810-766-7135 Date: 7/28/2015

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumb-ing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2205 Flusing Rd	2/15/15	1	L	C,P	N.D.	0.13	54663
212 Browning Ave.	2/18/15	1	L	P	104	N.D.	54945
1809 Stevenson St.	2/10/15	1	L	P	10	N.D.	54956
4202 Custer Ave.	3/4/15	1	L	C,P	6	0.27	56223
401 E. Newall St.	3/2/15	1	L	P	5	N.D.	56225
215 Browning Ave.	3/21/15	1	L	C,P	N.D.	0.16	56226
2615 Trumbull Ave.	2/27/15	1	L	C,P	3	N.D.	56227
201 Browning Ave.	3/5/15	1	L	P	N.D.	N.D.	56228
1224 Decker St.	3/17/15	1	L	C,P	13	0.10	57728
1220 Decker St.	3/17/15	1	L	P	4	N.D.	57730
1379 Washington Ave.	3/19/15	1	L	P	8	N.D.	57731
1383 Washington Ave.	3/19/15	1	L	C,P	6	0.17	57734
1372 Washington Ave.	3/19/15	1	L	C,P	2	0.14	57733
1367 Washington Ave.	3/17/15	1	L	P	1	N.D.	57735
1701 Marquette Dr.	3/14/15	1	L	C,P	1	0.19	57736
778 Bundy Ave.	3/24/15	1	L	P	N.D.	N.D.	58413
3714 Beecher Rd.	3/24/15	1	L	C	2	0.52	58414
1016 Ingleside Ave.	4/9/15	1	L	C,P	7	0.07	59749
1818 Rock Creek Ln.	4/6/15	1	L	C,P	3	0.11	59750
3010 Cheyenne St.	4/3/15	1	L	C,P	5	0.10	59751

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumbing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
2606 Mountain Ave.	4/15/15	1	L	P	N.D.	N.D.	60546
2020 Crooked Ln.	4/24/15	1	L	C,P	5	0.10	61845
310 E. Moore St.	4/22/15	1	L	P	5	N.D.	61846
631 Alvord Ave.	5/6/15	1	L	P	42	N.D.	63410
216 Browning Ave.	5/7/15	1	L	C,P	22	0.31	63411
3714 Beecher Rd.	5/14/15	1	L	C,P	8	0.15	64283
625 S. Grand Traverse	5/18/15	5	L	C,P	20	0.14	64284
912 Lexington Ave.	5/15/15	1	L	P	6	N.D.	64285
349 Robbie Ln.	5/31/15	1	L	P	2	N.D.	67428
353 Robbie Ln.	5/30/15	1	L	C,P	5	0.11	67427
341 Robbie Ln.	5/31/15	1	L	C,P	3	0.05	67426
328 Robbie Ln.	5/30/15	1	L	C,P	2	0.09	67425
357 Robbie Ln.	5/31/15	1	L	C	3	0.20	67424
344 Robbie Ln.	5/31/15	1	L	C,P	4	0.11	67423
1807 Oren Ave.	6/8/15	1	L	P	21	N.D.	68023
421 Lyon St.	6/14/15	1	L	C,P	7	0.14	68788
1528 Delaware Ave.	6/12/15	1	L	P	3	N.D.	68789
3811 Brentwood Dr.	6/14/15	1	L	P	42	N.D.	68790
1615 S. Franklin Ave.	6/14/15	1	L	P	N.D.	N.D.	68791
853 E. 7 <sup>th</sup> St.	6/12/15	1	L	C,P	7	0.07	68792

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category <sup>1</sup>	Service Lines <sup>2</sup>	Bldg Plumbing <sup>2</sup>	Lead (ppb)	Copper (ppb)	Lab #
1150 Woodside Dr.	6/14/15	1	L	P	29	N.D.	68793
547 Copeman Blvd.	6/14/15	1	L	P	18	N.D.	68794
920 Stocker Ave.	6/21/15	1	L	P	1	N.D.	69622
742 Lincoln Ave.	6/19/15	1	L	P	2	N.D.	69623
3517 Bennett Ave.	6/24/15	1	L	C,P	3	0.06	69624
1730 Overhill Dr.	6/22/15	1	L	C,P	1	0.08	69625
2117 Stanford Ave.	6/23/15	1	L	C,P	5	0.08	69626
2432 Beta Ln.	6/21/15	1	L	P	N.D.	N.D.	69627
2023 Miller Rd.	6/21/15	1	L	C,P	3	0.06	69628
721 East St. Apt #2	6/25/15	4	L	C,P	10	0.16	70222
3814 Whitter	6/25/15	1	L	P	2	N.D.	70223
3120 Norwood	6/24/15	1	L	P	5	N.D.	70224
2122 Pierce St.	6/21/15	1	L	P	2	N.D.	70225
3521 Bennett Ave.	6/25/15	1	L	P	3	N.D.	70226
1602 Raspberry Ln.	6/24/15	1	L	P	N.D.	N.D.	70227
1809 Lynbrook	6/26/15	1	L	P	3	N.D.	70228
2112 Sherff	6/24/15	1	L	C,P	9	0.06	70229
1205 Blanchard Ave.	6/24/15	1	L	C,P	11	0.05	70230
860 Schafer St.	6/26/15	1	L	C,P	N.D.	0.06	70231
2110 Flushing Rd.	6/30/15	1	L	C	N.D.	0.10	71158

<sup>1</sup> Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

<sup>2</sup> Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				

**Water Supply Name/County**      **City of Flint Water Plant**

## RESULTS:

[illegible]

2. Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 <sup>th</sup> percentile	Ave	Max	# > AL
Pb				
Cu				



## Consumer Notice of Lead Result in Drinking Water

Water Supply Name: City of Flint

County: Genesee WSSN: 2310

Sample Location: 401 E. Newall St. Date Sampled: 3/2/15

Thank you for participating in the lead and copper monitoring of drinking water. The levels of lead and copper found at your location are in the table below.

Key to Table	Contaminant	AL	MCLG	Your Result
<b>Action Level (AL):</b> The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. <b>Maximum Contaminant Level Goal (MCLG):</b> The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. ppb: parts per billion or micrograms per liter.	Lead (ppb)	15	0	5
	Copper (ppb)	1300	1300	Not Detected

*Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and it can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.*

To reduce exposure to lead in drinking water:

- *Run your water to flush out lead.* Run the water until it becomes cold.
- *Use cold water for cooking and preparing baby formula.* Do not cook with or drink water from the hot water tap; lead dissolves more easily in hot water.
- *Do not boil water to remove lead.* Boiling water will not reduce lead levels.
- *Look for alternative sources or treatment of water.* If your lead result is above 15 ppb, you may want to consider purchasing bottled water or a water filter. Read the package to be sure the filter is approved to reduce lead or contact NSF International at 800-NSF-8010, or [www.nsf.org](http://www.nsf.org) for information on performance standards for water filters.
- *Identify if your plumbing fixtures contain lead.* New faucets, fittings, and valves, may contain up to 8 percent lead including those advertised or labeled as "lead-free" and may contribute lead to drinking water. Consumers should be aware of this when choosing fixtures and take appropriate precautions.

Although the primary sources of lead exposure for most children are deteriorating lead-based paint, lead-contaminated dust, and lead-contaminated soil, the U.S. EPA estimates that 10 to 20 percent of human exposure to lead may come from drinking water.

For more information, contact us at: City of Flint Water Plant (810) 787-6537  
For more information on reducing lead exposure around your home and the health effects of lead, visit the U.S. EPA's Web site at [www.epa.gov/lead](http://www.epa.gov/lead), call the National Lead Information Center at 800-424-LEAD, or contact your health care provider.

Certification: \_\_\_\_\_ WSSN: 2310  
I certify that this public water supply has provided the consumer notice of lead result to persons served at each of the taps that was tested, either by mail or by another method approved by the DEQ, within 30 days of knowing the result. The Notice includes required content.

Michael Flanagan UTILITIES ADMINISTRATOR 3/17/15  
Signature Title Date Sent to Consumer

Reminder to water supplier: Complete this certification on only one (1) example copy of a notice sent to a consumer and submit it to the DEQ.



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-8184

FAX: (517) 335-8562

Sample Number

LF58413

## Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 778 E BUNDY AVE, FLINT  
Collected By: SANDRA HULL  
Township/Well#/Section: //  
County: Genesee  
Sample Point: MAIN BATHROOM  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE I  
Site Code:  
Collector: Private Citizen  
Date Collected: 03/24/2015 06:25  
Date Received: 03/31/2015 11:11  
Purpose: Routine Monitoring

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	04/01/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	Not detected	04/01/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krisztian

## **Thelen, Mary Beth (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, August 06, 2015 11:52 AM  
**To:** Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Pallone, Maggie (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ); Cook, Pat (DEQ); Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)  
**Subject:** University of Michigan inquiry re: Flint

Yesterday, Steve Busch and I participated in a conference call with Professors Lutgarde Raskin and Krista Wigginton (Dept. of Civil and Environmental Engineering) and Prof. Stuart Batterman (School of Public Health) and several of their graduate students.

They wanted to discuss recent events in Flint and are interested in possibly providing sampling, analysis, and education/outreach to address potential lead exposure issues, TTHM issues, possibly microbial activity and/or aesthetic problems. They are aware of the report published on the ACLU website identifying lead as an issue in Flint and were interested in helping to obtain analytical data to determine the potential extent of the problem and to help residents understand what it means for them.

We suggested they begin by having discussions with the City to determine what level of assistance might be helpful to the City.

If this moves forward, we would recommend that DEQ, DHHS staff, LHD staff, and a group of local residents/stakeholders be included in discussions to guide future activities.

Today, Steve provided UM with contacts at the City. UM is interested in quickly arranging a preliminary meeting to flesh out what might happen going forward.

We'll keep you updated if this progresses.

Liane

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

**Olszewski, Rosemarie (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 11:07 AM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** Wednesday Morning - Confidential Communications to Print for Possible FOIA  
**Attachments:** DWSD-CorrosionControlStudy.pdf; Flint lead history.pdf; DWSD-Flint-1993-Lead-Letter.pdf

More for Wednesday Morning.

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 11:04 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Need update on lead / copper tests for Flint

Print for possible FOIA. Confidential Communications.

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**From:** Wyant, Dan (DEQ)  
**Sent:** Sunday, July 26, 2015 12:35 PM  
**To:** Hollins, Harvey (GOV)  
**Subject:** FW: Need update on lead / copper tests for Flint

Harvey,

FYI, I will call you on Monday to discuss.

Dan Wyant, Director  
Department of Environmental Quality  
517-284-6700 (New Number)

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, July 24, 2015 4:18 PM  
**To:** Saxton, Thomas (Treasury); Muchmore, Dennis (GOV); Wyant, Dan (DEQ)  
**Subject:** FW: Need update on lead / copper tests for Flint

Guys, here's an update and some clarification on the lead situation in Flint. Please limit this information to internal for now.

By the tenants of the federal statute, the city is in compliance for lead and copper. That aside, they have not optimized their water treatment (for the most part, this means adding phosphates to minimize the degree that the water Ph mobilizes lead and copper in people's home plumbing).

Compliance with the standard started with testing. A June-December run of tests (all in homes with lead in their premise plumbing) concluded in December. Another January - June round of sampling concluded last month. Everything checks out in terms of compliance, but now the next step is optimizing the water supply.

*I believe this has already been released. Do we want to redact anything at this time?*

*Dr. Kelly OK*

*Opinion?*

*Look at it*

So, in about two weeks, DEQ will be sending a formal communication about the optimizing issue. The federal program has long timelines for action. A community water supplier gets 18 months to study the options, and two years thereafter to implement water system optimization measures.

My point: Conceivably, by the time we're halfway through the first timeline, the city will begin using a new water source with KWA ... and conceivably, the whole process starts all over again.

In terms of near-future issues, the bottom line is that residents of Flint do not need to worry about lead in their water supply, and DEQ's recent sampling does not indicate an eminent health threat from lead or copper. That said, anyone with lead pipes in their premise plumbing (this translates to tens of thousands of homes in our older urban centers, btw) should at least be aware that they have them, and to some limited degree that's going to impart minute parts per billion of lead in water no matter what. Its why nobody uses lead water pipes anymore.

The long version of this note is below. Let's connect next week. I'd like some thoughts about what more the state could be doing -- most immediately, to convey the results of our testing and tell the story to the residents of Flint in an effort to quell some fears.

Thanks!

b.

---

**From:** Busch, Stephen (DEQ)

**Sent:** Friday, July 24, 2015 3:46 PM

**To:** Wurfel, Brad (DEQ)

**Cc:** Shekter Smith, Liane (DEQ); Wyant, Dan (DEQ); Pallone, Maggie (DEQ); Prysby, Mike (DEQ); Benzle, Richard (DEQ)

**Subject:** RE: Need upate on lead / copper tests for Flint

Brad,

As we discussed, the City has completed the last round of monitoring (Jan 1 -- June 30, 2015). The last samples came in about a week ago. We have made the compliance determination that the 90<sup>th</sup> percentile level is 11 parts per billion, which is below the Action Level Standard of 15 parts per billion (there is no Lead maximum contaminant level standard). The federal rule requires measuring lead levels in water from household plumbing materials to determine the corrosivity of the City's water in order to limit exposure.

I have provided a summary of Flint's lead compliance monitoring from the last 20+ years since this regulation started in 1991. The City of Flint itself has never had a 90<sup>th</sup> percentile level exceed the 15 part per billion action level. Sampling requirements look at the worst case plumbing materials. Samples must be collected in accordance with the regulatory requirements and criteria in order to be used for compliance determinations.

Because the City of Flint serves a population of over 50,000 they are required to have Fully Optimized Corrosion Control. While it is possible to meet the fully optimized requirement without additional treatment, based on their two rounds of sampling since switching to the Flint River, we have determined they did not meet the eligibility for this per the regulation. They now have to complete a study (within 18 months) and are then allowed a period of additional time (2 additional years) to install the selected treatment for Fully Optimized Corrosion Control in accordance with the regulatory requirements. This is what DWSD was required to do back in 1993 -- 1997 (see attached letter and study). We are planning to suggest the City directly submit a treatment process to shorten the timeline to achieve full optimization. This letter is currently being drafted but won't be ready to mail out for another week.

Liane and I had a conference call with EPA region V in Chicago on Tuesday to go over all of this and they are in support of these next steps with the City.

The matter will be potentially further complicated when the City switches over to water from the Karegnondi Water Authority next year to re-evaluate the continuing requirement to fully optimize corrosion control.

The DEQ recognizes that there is has been no level of lead exposure determined to be safe, but again the regulation was developed to optimize water corrosivity to limit exposure and the City is following the regulatory requirements.

Lead is not coming from the Flint River or the City's Water Treatment Plant or the public distribution system. It is from lead service lines into homes and from plumbing materials and fixtures within the private property of the household.

As watermains are replaced within the City lead services associated with that section of watermain would be replaced in order to reconnect to City water. This would also place burden on the homeowner to pay for having the service line re-plumbed. However, since 2000 only 16 miles of the City's 500 miles of watermain have been replaced as they did not have the financial means to do so.

Let us know if there are questions or you need any additional information.

Stephen Busch, P.E.  
MDEQ Lansing District Coordinator  
Office of Drinking Water and Municipal Assistance  
Lansing and Jackson District Supervisor  
517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, July 24, 2015 12:09 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Wyant, Dan (DEQ); Pallone, Maggie (DEQ)  
**Subject:** Need upate on lead / copper tests for Flint

Guys, the Flint Ministers met with the Governor's office again last week. They also brought along some folks from the community – a college prof and a GM engineer – who imparted that 80 water tests in Flint have shown high lead levels.

Could use an upate on the January / june testing results, as well as recap of the December testing numbers, and any overview you can offer to edify this conversation.

Call me or email today if possible. Thanks!

b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713  
517-230-8006 cell

**Thelen, Mary Beth (DEQ)**

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**From:** DEQ-Legislative-Contact  
**Sent:** Wednesday, September 30, 2015 4:37 PM  
**To:** Devereaux, Tracy Jo (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Pallone, Maggie (DEQ); Howes, Sarah (DEQ); Shekter Smith, Liane (DEQ); DEQ-Legislative-Contact  
**Subject:** ODWMA/LEG00210/Robertson/Flint Water Questions

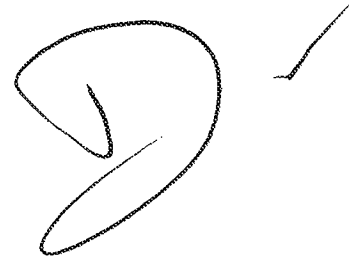
Due 10/5/15

Please have staff respond to the appropriate portions of the concern below to Kirsten from Senator Robertson's office.

Please keep everyone updated on any responses.

Thanks!

Heather Feuerstein  
Management Assistant to  
Maggie Pallone, Deputy Director and  
Brad Wurfel, Communications Director  
Department of Environmental Quality  
517.284.6715



**From:** Howes, Sarah (DEQ)  
**Sent:** Wednesday, September 30, 2015 11:28 AM  
**To:** VanDyke, Trevor (DNR); KDellaSantina@senate.michigan.gov  
**Cc:** DEQ-Legislative-Contact  
**Subject:** RE: Flint Water and Crime Concerns

Sure is!

Kirsten, I'll have staff from our Office of Drinking Water and Municipal Assistance reach out to you to discuss the current issues and steps that are being taken to address the situation with Flint's water.

Thanks for sending this over, Trevor.

Sarah

Sarah M. Howes | Legislative Liaison  
Department of Environmental Quality  
517.284.6707 O | C 517.282.9204

**From:** VanDyke, Trevor (DNR)  
**Sent:** Wednesday, September 30, 2015 11:22 AM  
**To:** Howes, Sarah (DEQ)  
**Subject:** FW: Flint Water and Crime Concerns

Is this a DEQ issue?

Sincerely,

**Trevor J. VanDyke, J.D.**  
*Director, Legislative & Legal Affairs Office*  
*Michigan Department of Natural Resources*  
Ph. 517.284.5808  
Fx. 517.335.4242  
[vandyket1@michigan.gov](mailto:vandyket1@michigan.gov)



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**From:** Kirsten DellaSantina [<mailto:KDellaSantina@senate.michigan.gov>] **On Behalf Of** The Office of Senator Robertson  
**Sent:** Wednesday, September 30, 2015 10:38 AM  
**To:** VanDyke, Trevor (DNR)  
**Subject:** FW: Flint Water and Crime Concerns

Hello.

I wasn't sure who to contact, so I'm hoping maybe you could direct me. Do you know anything about the water situation in Flint?

Kirsten L. Della Santina  
Director of Communications  
Senator Dave Robertson - 14<sup>th</sup> Senate District  
517-373-5077

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**From:** [mzsigohiggins@comcast.net](mailto:mzsigohiggins@comcast.net) [<mailto:mzsigohiggins@comcast.net>]  
**Sent:** Wednesday, September 30, 2015 10:27 AM  
**To:** The Office of Senator Robertson <[SenDRobertson@senate.michigan.gov](mailto:SenDRobertson@senate.michigan.gov)>  
**Subject:** Flint Water and Crime Concerns

Dear Dave,

I trust you are doing fine. When you get to the Flint area we should have coffee and catch up.

I am very upset about the water in Flint. I am now a City of Flint resident (for the past 5 years) so I am an authority on the water concerns.



The first time they switched to the Flint River for its source, it backed up my basement with about 4" of water. I was not a happy person. I know it was a result of the change, but no one will take responsibility.

It tasted awful. I couldn't even use a simple purifier to make it taste better. So I began buying gallons and individual bottles of water to drink and use to cook. I will not even rinse my toothbrush with it. I should be able to deduct that off of my extremely high bill. Yesterday I received my bill and about gagged. \$88!!!!!!!!!!!!!! For water I cannot cook with nor drink! That is so wrong. I will not pay that entire amount! It's time I deducted for having to haul in gallons a week of decent water.

A few weeks ago I had a repaired pipe bust. More water in the basement-lovely. I am sure it's because of all the chemicals in the water. It is destroying my pipes!

Dave, please make this an immediate priority in your work. We must be returned to the Detroit Water System. There is no other way to fix this problem. Because the decision was made while the governor had appointed a city manager for the so-called help for Flint's financial situation, the State of Michigan/Governor should bite the bullet and pay to return Flint to DWS. As I said, no one can fix that Flint River water to be useable. It appears that Flint lives do not matter. The lies we've been told are detrimental to our lives. Please take immediate action to help us.

I love Flint. I realized how wonderful my neighborhood is when my garage was destroyed in August. The storm caused two of my neighbor's trees to fall on it. I had warned the property owner Richard Burris, who likes to be called Doc because he's a chiropractor, (yes it's a rental) that the next bad storm could damage my garage. Now I'm probably going to have to sue him for the extra it's costing me to replace it as it went over and above my homeowner's insurance. That's another problem-landlords who will not properly maintain their rental properties. Perhaps some laws on the books to give them an incentive to do so would help. Anyway my neighbors gathered and gave me moral support. I love the diversity and quality of the people in my immediate neighborhood. It's a wonderful feeling to know they really care. So many other places I lived took advantage of my disability.

Other concerns involve the crime rate in Flint. We do not need fewer police and firemen. We need more. Please allow for that when you consider the financial help to Flint. There are still many decent people who live here. Sometimes I would like the northern part of Flint to be merged with Beecher and call it a war zone, rope it off and make them pay for their own police since many of the murders happen there. It sickens me that there is such a total disregard of life.

I appreciate your work as our Senator. I continue to support your ideas. And you are the only republican I would vote for. LOL. Take care Dave and hope to hear from you soon.

Sincerely,

Mari Zsigo  
2309 Mountain Avenue  
Flint, MI 48503  
810-962-2293

## **Flint Update 9/29**

### **Issues:**

- DWSD switch
- Emergency Declaration
- Edwards issue
- Testing protocols

## **Flint Drinking Water Action Plan**

- 1. Governor Snyder names Dr. Eden Wells as Flint drinking water Public Health Advisor.**

Action to date: Dr. Wells has been brought in and is reviewing the Hurley Health information.

- 2. All Flint schools water (public, charter and parochial) will immediately be tested to ensure that drinking water is safe.**

Action to date: Phone call with Superintendent and Facilities manager to identify schools. Phone call with Genesee County Public Health, DEQ and Flint schools afternoon of 9/29 to discuss testing protocols and timeline. DEQ has volunteered to pay for testing.

Checking with MDE on fund availability to replace lead lines if they are identified in the testing.

- 3. Advisories will be disseminated recommending citizens flush your cold water pipes, use only water from the cold water tap for drinking, cooking and especially for making baby formula.**

Action to date: This step has already started to occur.

- 4. Convene a safe drinking water "Technical Advisory Committee" to ensure best technology, practices and science is being utilized, including EPA's expertise and assistance from their Office of Research and Development.**

Action to date: Committee will meet October 7. EPA will have Tom Burke, who heads up EPA's Office of Research and Development, participate on the Committee.

- 5. Implementation of fully optimized corrosion controls in the Flint drinking water system.**

Action to date: Technical Advisory Committee is meeting October 7 to recommend this. Flint will submit permit application to DEQ October 8. Corrosion control will begin by end of October.

**6. Expanded water testing of at risk properties.**

Action to date: EPA and DEQ have a conference call at 1:45 PM 9/29 to discuss additional testing locations and protocols.

**7. Offer water testing at no cost to Flint residents to assure water is safe.**

Action to date: City is already offering. DEQ will be discussing cost issues with the City.

**8. Offer premixed formula if test results indicate high levels of lead.**

Action to date: DHHS evaluating.

**9. Accelerate water system improvements to address replacement of lead service lines.**

Action to date: EPA has indicated that federal Drinking Water Revolving Loan money can be used to replace private service lines. State law needs to be changed to allow this to occur.

**10. Provide filters to residences of Flint.**

Action to date: Ananich has indicated United Way would supply some. Harvey to follow up with Meijer.

**11. Expedite Completion of KWA.**

Action to date: DEQ had initial conversation with Drain Commissioner to indicate help in moving any remaining permits.

**12. Facilitate conversation between the City of Flint and DSWD.**

**Next Steps:**

Press Conference in Flint - Friday, October 2, 1:30  
Kettering University (exact room TBD)

**Participants**

Governor/ Lt. Governor  
Harvey Hollins – Governor's office  
Dan Wyant – Michigan Department of Environmental Quality  
Nick Lyon – Department of Community Health  
Dr. Eden Wells- Department of Community Health  
Susan Hedman – Region 5 Administrator or EPA  
Jamie Curtis- Chair, Genesee County Board of Commissioners  
Jeff Wright- Genesee County Drain Commissioner  
Local Public Health Department  
Mayor of Flint

• • •

Jul 9



**Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS/DM/DWyant - Conference Call Re: Flint Water

**Location:** By Phone

**Start:** Mon 9/28/2015 8:30 AM

**End:** Mon 9/28/2015 9:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar

**Required Attendees:** Muchmore, Dennis (GOV); Wisniewski, Wendy (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)

Per RDS

RDS to call: PPI ##

**PPI**

Host: PPI - DWyant to host

MTG Notices  
Do any of  
these apply to  
FP FOIA?  
I think they apply but shouldn't  
the host participants be  
reduced?  
Don't need to call  
anyone for this

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS/DM/BM/NL/DW - Call to Congressman Dan Kildee  
**Location:** By Phone

**Start:** Mon 9/28/2015 11:30 AM  
**End:** Mon 9/28/2015 12:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar  
**Required Attendees:** McBride, Bill (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Lyon, Nick (DCH); Grijalva, Nancy (DCH); Muchmore, Dennis (GOV); Wisniewski, Wendy (GOV)

Purpose: Request from Kildee to talk about the lead in the water in Flint

**Participants:**

- Congressman Kildee
- Jen Cox, Chief of Staff
- Troy Nienberg, Legislative Director
- Jordan Dickinson, Legislative Assistant

**PPI**

**PPI**

DM to dial in as host

POC: Jordan Dickinson – 202-225-3611 [jordan.dickinson@mail.house.gov](mailto:jordan.dickinson@mail.house.gov) or Brunner, Nathan  
[Nathan.Brunner@mail.house.gov](mailto:Nathan.Brunner@mail.house.gov)

## Olszewski, Rosemarie (DEQ)

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**Subject:** RDS/DM/BM/NL/DW - Conference call with Senator Ananich  
**Location:** By Phone 888-363-4734,8960142#,0#

**Start:** Mon 9/28/2015 12:00 PM  
**End:** Mon 9/28/2015 12:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar

**Required Attendees:** Thelen, Mary Beth (DEQ); McBride, Bill (GOV); Muchmore, Dennis (GOV); Lyon, Nick (DCH); Wisniewski, Wendy (GOV); Grijalva, Nancy (DCH); Wyant, Dan (DEQ)

Purpose: Flint water

Senator Ananich and COS Andy Leavitt

RDS to call: **PPI** )#

Different # than the 11:30 am Call

**PPI**

DM to dial in as host

POC: Michelle Carnevale [MCarnevale@senate.michigan.gov](mailto:MCarnevale@senate.michigan.gov)



## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Susan Hedman to Call Dan Wyant at 1:30 EST (on Dan's Cell)  
**Location:** Dan's Cenn - Susan Hedman to call Dan at 1:30 EST

**Start:** Mon 9/28/2015 1:30 PM  
**End:** Mon 9/28/2015 2:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Pallone, Maggie (DEQ)

Susan Hedman to Call Dan Wyant at 1:30 EST (on Dan's Cell)

Maggie: FYI – since you will be with Dan, please remind him to pick up his cell around 1:30 when Susan calls.

Thanks.  
MBT

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** 3:00 Discussions Today  
**Location:** Directors' Office

**Start:** Mon 9/28/2015 3:00 PM  
**End:** Mon 9/28/2015 3:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Busch, Stephen (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ); Wurfel, Brad (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ)

**Importance:** High

3:00 today with the Director, Steve, Maggie, Brad, and Karen.

Thank you.

MBT

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Diane Kartz will call the Director at 4:15  
**Location:** Dan's Office

**Start:** Mon 9/28/2015 4:15 PM  
**End:** Mon 9/28/2015 4:45 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Fiedler, David (DEQ); Tommasulo, Karen (DEQ); Wurfel, Brad (DEQ)

Please refer to email of 9/25/15. Thanks.

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS/DM/BM/NL/DW/Maggie Pallone/Karen Tommasulo/Col. Etue & Lt. Col. Sands/HH/DMurray/TSaxton - Meeting Re: Flint Water

**Location:** Governor's Conference Room, Romney

**Start:** Tue 9/29/2015 1:00 PM

**End:** Tue 9/29/2015 1:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar

**Required Attendees:** McBride, Bill (GOV); Wisniewski, Wendy (GOV); Muchmore, Dennis (GOV); Lyon, Nick (DCH); Grijalva, Nancy (DCH); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Etue, Kriste (MSP); Klotz, Josephine (MSP); Hollins, Harvey (GOV); Clayton, Stacie (GOV); Hansen, Rachel (GOV); Murray, David (GOV); Adamczyk, Lynne (GOV); Sands, Thomas (MSP)

**Optional Attendees:** Clement, Elizabeth (GOV); Agen, Jarrod (GOV)

**PPI**

HH by Phone

**PPI**

HH to dial in as host

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Call Tom Burke of US EPA at 1:45

**Location:** Jim Sygo's Office

**Start:** Tue 9/29/2015 1:45 PM

**End:** Tue 9/29/2015 2:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)

**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Busch, Stephen (DEQ)

**Optional Attendees:** Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)

Jim and Steve,

Director wants you to handle this call with Tom Burke on lead this afternoon at 1:45. You can do it in Jim Sygo's office.

Tom's number is 202-564-6620.

Thank you.

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** George and Director to talk via phone RE: Flint Water Samples  
**Location:** George to call Mary Beth's number at 284-6712 or 284-6700 OR Stop by since you need to be here for 10:00 Engagement Meeting

**Start:** Wed 9/30/2015 9:15 AM  
**End:** Wed 9/30/2015 9:30 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Krisztian, George (DEQ)  
**Optional Attendees:** Wagner, Robert (DEQ) (WAGNERR1@michigan.gov); Shaler, Karen (DEQ); Pallone, Maggie (DEQ); Thelen, Mary Beth (DEQ)

**Importance:** High

George,  
Dan Wyant needs to talk to you on the phone Wednesday. Can you please call my number at 284-6712 or 284-6700. I won't be here but Rosemarie or Karen will be here to transfer you to the Director.  
I did notice on your calendar that you will may be downtown for a meeting at 10:00 so if it is easier for you, please stop by at 9:15.

Thanks you.  
Mary Beth  
284-6712

(Others, Just FYI only).

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Discussion  
**Location:** Director's Conference Room  
  
**Start:** Wed 9/30/2015 3:30 PM  
**End:** Wed 9/30/2015 5:30 PM  
  
**Recurrence:** (none)  
  
**Meeting Status:** Accepted  
  
**Organizer:** Feuerstein, Heather (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ) (WurfelB@michigan.gov); Tommasulo, Karen (DEQ); Busch, Stephen (DEQ); Krisztian, George (DEQ)

**Olszewski, Rosemarie (DEQ)**

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**Subject:** 10:30 EST - Call with Susan Hedman, Tom Burke, Dan Wyant and DEQ Staff  
**Location:** CH-65-DEQ-DIRECTOR

**Start:** Thu 10/1/2015 10:30 AM  
**End:** Thu 10/1/2015 11:30 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Shekter Smith, Liane (DEQ); Shaler, Karen (DEQ); Pallone, Maggie (DEQ); Feuerstein, Heather (DEQ); Wurfel, Brad (DEQ); Benzie, Richard (DEQ)

**Importance:** High

Update: This call has been confirmed for 10:30.  
MBT will provide the call in number to the Director.  
Please come to the Director's Conference Room.  
Thanks.

=====

I heard from Tom Burke's office – it will either be 10:30 OR between 12:00-1:00 EST.  
They will call me back as soon as they know.  
Thanks.

=====

A conference call will occur sometime this morning with Susan Hedman, EPA folks, etc.  
We don't have a time yet.

Director will need Steve Busch, Jim Sygo and George Kristian for sure.  
Maggie and Brad invited.

Thank you.

MBT

P.S. Stay tuned.



## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Comms. Update Mtg. re: Flint Water Plan  
**Location:** Great Lakes Conference Room, 6th floor, South Tower, Constitution Hall

**Start:** Thu 10/1/2015 12:30 PM  
**End:** Thu 10/1/2015 1:15 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Kennedy, Jordan (GOV)  
**Required Attendees:** Lasher, GERALYN (DHHS); Eisner, Jennifer (DHHS); Minicuci, Angela (DHHS); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); Feuerstein, Heather (DEQ); Stanton, Terry A. (Treasury); Wurfel, Sara (GOV); Murray, David (GOV); Paciorek, Josh (GOV)  
**Optional Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)

Pizza will be provided.

## Olszewski, Rosemarie (DEQ)

---

**Subject:** Pre-Brief on Thursday Afternoon with Director Dan Wyant and others  
**Location:** CH-6S-GREAT-LAKES

**Start:** Thu 10/1/2015 1:30 PM  
**End:** Thu 10/1/2015 2:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Sygo, Jim (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); Busch, Stephen (DEQ); Lyon, Nick (DCH); Muchmore, Dennis (GOV); Hollins, Harvey (GOV); Wurfel, Sara (GOV); Hedman.Susan@epa.gov; Hertel, Elizabeth (DCH)  
**Optional Attendees:** Etue, Kriste (MSP); Wells, Eden (DCH); Lasher, Geralyn (DCH); Becker, Timothy (DCH); Shekter Smith, Liane (DEQ); Klotz, Josephine (MSP); Grijalva, Nancy (DCH); Sims, Teri (DCH); Wisniewski, Wendy (GOV); Clayton, Stacie (GOV); Williams, Felicia; 'Martinez, Isidra'; Shaler, Karen (DEQ); Feuerstein, Heather (DEQ); Devereaux, Tracy Jo (DEQ)

**Importance:** High

September 30 update: Due to various conflicts, this is to confirm that this pre-brief will now be held tomorrow, October 1, at 1:30-2:30 p.m. EST. This meeting will still be held in Constitution Hall, 6<sup>th</sup> Floor South, Great Lakes Conference Room, and for those who need to call in, please use the number provided below. Thank you for rearranging your schedules to accommodate this meeting.

Karen Shaier for  
Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

---

**Update:** To accommodate schedules, we are changing the time to 3:30 EST. If something changes again, I will keep you posted. We appreciate everyone's flexibility as we work through this very important issue. We recognize that we won't be able to accommodate everyone, please do the best that you can or send a representative. Thank you.

=====

Director Dan Wyant invites you to a pre-brief on **Thursday afternoon, October 1, 2015, 3:30-4:30 EST**. This will be at **Constitution Hall, 525 W. Allegan Street, Lansing, 6<sup>th</sup> Floor, Great Lakes Conference Room, 6<sup>th</sup> Floor South Tower**, or by telephone for those you cannot attend in person. We recognize that some calendars may be busy and if you cannot personally adjust your schedule to please send or have a representative in your place.

Call In number if you cannot attend in person:

**PPI**

Dan Wyant will have the host number

Please confirm your attendance. Again, we appreciate and thank you for your time on Thursday.

Mary Beth Thelen

DEQ

517-284-6712

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** elected leaders pre-briefing phone call  
**Location:** meet at DHHS, call in # below

**Start:** Fri 10/2/2015 10:30 AM  
**End:** Fri 10/2/2015 11:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Pallone, Maggie (DEQ)

**Required Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Lyon, Nick (DCH); Grijalva, Nancy (DHHS); Hertel, Elizabeth (DHHS); Lasher, Geralyn (DHHS); Brown, Eric (GOV)

**PPI**

Host Passcode: **PPI** (Dan you are the host)

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Dan in Romney for Gov's press calls

**Location:** Romney building

**Start:** Fri 10/2/2015 11:00 AM

**End:** Fri 10/2/2015 11:30 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Pallone, Maggie (DEQ)

**Required Attendees:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Wurfel, Brad (DEQ)  
(WurfelB@michigan.gov); Tommasulo, Karen (DEQ)

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS - Pre-Brief for Flint Water Media Conference Call  
**Location:** By Phone  
  
**Start:** Fri 10/2/2015 11:00 AM  
**End:** Fri 10/2/2015 11:10 AM  
  
**Recurrence:** (none)  
  
**Meeting Status:** Accepted  
  
**Organizer:** GovCalendar  
**Required Attendees:** Wyant, Dan (DEQ); Lyon, Nick (DHHS); Wells, Eden (DHHS); Grijalva, Nancy (DHHS); Thelen, Mary Beth (DEQ); Hansen, Rachel (GOV); Wurfel, Sara (GOV)

**RDS to Call:** PPI

**PPI**

**HOST PASSWORD:** PPI – SW to host

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Flint Discussion with Director

**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Mon 10/5/2015 9:00 AM

**End:** Mon 10/5/2015 10:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Devereaux, Tracy Jo (DEQ)

**Required Attendees:** Cook, Pat (DEQ); Busch, Stephen (DEQ); Wyant, Dan (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)

**Optional Attendees:** Rennaker, Joanne (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)

For those able to attend in person, please do so, 6<sup>th</sup> floor, south tower. For those needing to participate via telephone, please call  Host password is

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Pre-Brief at 8:00  
**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Tue 10/6/2015 8:00 AM  
**End:** Tue 10/6/2015 8:45 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Tommasulo, Karen (DEQ); Krisztian, George (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ)

**Importance:** High

Liane and Tracy Jo, if I have missed someone, please send directly.  
Thanks.



**Olszewski, Rosemarie (DEQ)**

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**Subject:** City of Flint Mayor Meeting at 10:00  
**Location:** Flint Municipal Center located at 1101 S. Saginaw Street, Flint 48505.

**Start:** Tue 10/6/2015 8:20 AM  
**End:** Tue 10/6/2015 2:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Krisztian, George (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Cook, Pat (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Shaler, Karen (DEQ); Tommasulo, Karen (DEQ); Grijalva, Nancy (DHHS); Devereaux, Tracy Jo (DEQ)

**Importance:** High

For those riding with the Director, Director wants to leave Lansing with George and Sygo at 8:15/8:20 as he has a conference call at 9:30 with Susan Hedman.

-----

**Meeting notice includes travel time – Plan to leave at 8:45 with the Director – meet at security desk area.**

**Car 1 is Director, George, and Jim Sygo.**  
**Car 2 is Liane and appropriate ODWMA staff.**

**Meeting begins at 10:00**

Attendees from DEQ:

Director  
Jim Sygo  
George Krisztian

Liane Shekter Smith  
Pat Cook ?  
Mike Prysby

Sheryl Thompson of Dept. HHS will also attend but will drive separate.

Karen T. and Maggie – FYI only.

I've extended the meeting notice for Dan, Sygo, and George as the Director may be needed for CBS Nightly News at 12:00-1:00 in Flint – Wurfel is working on that.

=====

Flint Location:

We are in the Flint Municipal Center located at 1101 S. Saginaw Street, Flint 48505. Metered parking is available on both sides of the street in front of City Hall and on the side streets.

Mr. Wyant and guests can park in the Employee Parking Lot located on Seventh Street (as you exit I-69 at Saginaw Street - make a left turn onto Saginaw Street staying in the right lane. On the right they will see a Gas Station and a Pawn Shop. That corner is Seventh; turn right and drive to the Employee Parking Lot which will be on the left) If someone will call me at **810.237.2035** I will meet them at the back entrance and escort them to the Mayor's Suite.

Mary Beth's Contact Info for this meeting:

Maxine Murray  
Executive Assistant to  
Mayor Dayne Walling  
1101 S. Saginaw Street  
Flint, MI 48502  
810.237.2035 Telephone  
810.766.7218 Fax

=====  
**The Mayor is available to meet on Tuesday, October 6, 10:00-12:00.**

Please hold this time for now until I confirm with the Director.

Thanks.

MBT

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Conference Call with Susan Hedman at 9:30 EST  
**Location:** In Car (or in Conference Room in Flint)

**Start:** Tue 10/6/2015 9:30 AM  
**End:** Tue 10/6/2015 10:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Shekter Smith, Liane (DEQ);  
Krisztian, George (DEQ)  
**Optional Attendees:** Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ); Thelen, Mary Beth (DEQ)

The following will be on a conference call with Susan Hedman and other EPA staff:

Director  
Sygo  
Krisztian  
Shekter Smith

Call In:

**PPI**

Dan Wyant will have the host number

Thank you.  
MB T

Liane, Director may arrive early in Flint so I may try and get a room – you may call in on your cell or arrive early as well.

Thanks.

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS - Call from Dan Wyant Re: Flint Water  
**Location:** By Phone

**Start:** Tue 10/6/2015 12:40 PM  
**End:** Tue 10/6/2015 12:55 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar  
**Required Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Scott, Allison (GOV)

Dan to call ALS desk – 517-241-5022

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Meeting with Dan Wyant/Dr. Wells(by hone)/Lynda Dykema in person  
**Location:** Great Lakes Conference Room, 6th Floor South Tower, Constitution Hall, 525 W. Allegan Street, Lansing

**Start:** Tue 10/6/2015 2:00 PM  
**End:** Tue 10/6/2015 3:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Tommasulo, Karen (DEQ); Krisztian, George (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Dykema, Linda D. (DCH); Wells, Eden (DHHS)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Bouters, Janese (DHHS); Devereaux, Tracy Jo (DEQ); Barr, Jacqui (DHHS); Shaler, Karen (DEQ); Rockefeller, Cheryl (DHHS)

**Importance:** High

**Please hold 2:00 to meet with:**

Director Dan Wyant, Dr. Wells (by phone), and Lynda Dykema of DHSS (Lynda is only available from 2:00-2:40)

DEQ staff will be needed for this as well.

This will be at 2:00 assuming Director Dan Wyant and his team can be back by then.

Dr. Wells, I will send you a call in number. Dan Wyant will be the host.

**If the time changes, I will keep everyone posted.**

Thank you.

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** DEQ Team meets with the Director at 11:00  
**Location:** Great Lakes Conference Room - 6th Floor South

**Start:** Wed 10/7/2015 11:00 AM  
**End:** Wed 10/7/2015 11:45 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Krisztian, George (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ)

DEQ team to meet with the Director at 11:00 this morning.

Thank you.

Mary Beth

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** RDS/DW - Conference call with Ridgeway White  
**Location:** By Phone

**Start:** Wed 10/7/2015 12:15 PM  
**End:** Wed 10/7/2015 12:35 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar

**Required Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)

**PPI**

**PPI**

Host: **PPI** – RH to dial in as host

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS/DW - Conference call with Mayor Dayne Walling  
**Location:** By Phone  
  
**Start:** Wed 10/7/2015 12:40 PM  
**End:** Wed 10/7/2015 12:55 PM  
  
**Recurrence:** (none)  
  
**Meeting Status:** Accepted  
  
**Organizer:** GovCalendar  
**Required Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Emmitt, Beth (GOV)

**PPI**

**PPI**

HOST PASSWORD **PPI** BE to dial in as host



## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Technical Advisory Committee Meeting Mtg Starts at 2:00 - (Mtg notices includes travel time)  
**Location:** Flint Municipal Center located at 1101 S. Saginaw Street, Flint 48505.  
**Start:** Wed 10/7/2015 12:45 PM  
**End:** Wed 10/7/2015 5:15 PM  
**Recurrence:** (none)  
**Meeting Status:** Accepted  
**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Prysby, Mike (DEQ); Krisztian, George (DEQ)  
**Optional Attendees:** Wyant, Dan (DEQ); Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ)

Meeting notice includes travel time.

Technical Advisory Committee Meeting is at 2:00. The meetings are normally 2:00-4:30.

**It is my understanding that Jim Sygo, George Krisztian, and Mike Prysby are attending. If someone else from DEQ is attending that I'm not aware of, please forward or let me know.**

**Others: FYI.**

**The meeting location is as follows:**

**Flint Location:**

We are in the Flint Municipal Center located at 1101 S. Saginaw Street, Flint 48505. Metered parking is available on both sides of the street in front of City Hall and on the side streets.

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** After Action Review Meeting  
**Location:** CH-6S-GREAT-LAKES

**Start:** Wed 10/7/2015 2:30 PM  
**End:** Wed 10/7/2015 4:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Krisztian, George (DEQ); Benzie, Richard (DEQ); Pallone, Maggie (DEQ); Butler, Sonya (DEQ); Monosmith, Carrie (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ); Thelen, Mary Beth (DEQ); Rennaker, Joanne (DEQ); Winegar, Carla (DEQ); Looney, Carolyn (DEQ)

Director asked for an after action review meeting with the following:

Director Wyant  
Jim Sygo  
George Krisztian  
Liane Shekter Smith  
Richard Benzie  
Steve Busch  
Any other ODWMA management team members (Liane or Tracy Jo to forward or if I have missed anyone or attendance as needed)  
Brad Wurfel  
Karen Tommasulo  
Maggie Pallone (you might be optional – I'll have to check next week or it may be your call)  
If I have missed anyone, please let me know.

**This date/time could change next week but for now let's go with this. Don't change your schedule yet.**

Thank you.

Mary Beth

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** 2:35 Conf Call w/ Director Wyant  
**Location:** 877-336-1831, Access Code 2271885

**Start:** Wed 10/7/2015 2:35 PM  
**End:** Wed 10/7/2015 2:45 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Minix, Connie (DTMB)

**Required Attendees:** Roberts, John (DTMB) (RobertsJ9@michigan.gov); Duncan, Nancy (DTMB); Starr, Scott (DTMB); McNeely, Jacques (DTMB); Harrison, Jennifer (DTMB); Kimmith, Dean (DTMB); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Lyon, Nick (DCH); Grijalva, Nancy (DCH)

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS/DW - Meeting with Mayor Dayne Walling and Ridgeway White  
**Location:** Mott Foundation - 503 S. Saginaw, Ground Floor, Flint

**Start:** Thu 10/8/2015 9:00 AM  
**End:** Thu 10/8/2015 9:45 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar  
**Required Attendees:** Agen, Jarrod (GOV); Heaton, Anna (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)

Walling POC: Jasmine Green, Receptionist, Mayor's Office, 810-237-2010 [jgreen@cityofflint.com](mailto:jgreen@cityofflint.com)

White POC: Lisa Maxwell, Executive Assistant to Ridgeway H. White, Charles Stewart Mott Foundation, Ph: (810) 766-1736, E-mail: [lmawell@mott.org](mailto:lmawell@mott.org)

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS - Pre-Brief  
**Location:** Mott Foundation - 503 S. Saginaw, Ground Floor, Flint

**Start:** Thu 10/8/2015 9:45 AM  
**End:** Thu 10/8/2015 10:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar  
**Required Attendees:** Heaton, Anna (GOV); Agen, Jarrod (GOV); Biehl, Laura (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Hollins, Harvey (GOV); Clayton, Stacie (GOV)

Need space for apprx. 10 ppl to pre-brief

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** RDS - REMARKS (AHeaton) Press Conference Re: Flint Water  
**Location:** Mott Foundation Conference Center, 503 S. Saginaw, Flint

**Start:** Thu 10/8/2015 10:00 AM  
**End:** Thu 10/8/2015 10:42 AM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** GovCalendar  
**Required Attendees:** Agen, Jarrod (GOV); Biehl, Laura (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Hollins, Harvey (GOV); Clayton, Stacie (GOV); Lyon, Nick (DHHS); Grijalva, Nancy (DHHS)  
**Optional Attendees:** Heaton, Anna (GOV); Wurfel, Sara (GOV)

Purpose: Press conference regarding Flint water

### Program Participants:

Flint Mayor Dayne Walling  
DEQ Director Dan Wyant  
DHHS Director Nick Lyon  
Dr. Eden Wells, DHHS  
Ridgeway White, Mott Foundation  
Harvey Hollins  
Sen. Jim Ananich

### Non-Speaking Invitees: (all attendance unconfirmed)

Rep. Tim Greimel  
Rep. Phil Phelps  
Rep. Sheldon Neely  
Flint City Councilmembers  
Faith Based Community members  
U of M Flint Chancellor Susan Borrego (RDS talked to 10/7/15 at the Higher Ed Summit)  
Amy Hovey, Staff of Congressman Dan Kildee  
Jamie Gaskin, CEO of Genesee County United Way  
Tim Herman, CEO of Flint and Genesee Chamber of Commerce  
Brian Larkin, Flint and Genesee Chamber of Commerce (fmr. EO staff)  
Kathryn Thomas, VP of Communications for Mott Foundation  
Neal Hegarty, VP of Programs for Mott Foundation  
Kimberly Roberson, Director of Flint Area Grantmaking Program for Mott Foundation

### Agenda:

10:00 AM – 10:01 AM Harvey Hollins kicks off press conference; introduces Governor  
10:01 AM – 10:05 AM Governor gives remarks  
10:05 AM – 10:06 AM Harvey Hollins introduces Mayor Dayne Walling  
10:06 AM – 10:10 AM Mayor Walling gives remarks  
10:10 AM – 10:11 AM Harvey Hollins introduces DEQ Director Dan Wyant

10:11 AM – 10:15 AM Director Wyant gives remarks  
 10:15 AM – 10:16 AM Harvey Hollins introduces DHHS Director Nick Lyon  
 10:16 AM – 10:17 AM Director Nick Lyon brief comments, introduces Dr. Eden Wells  
 10:17 AM – 10:20 AM Dr. Eden Wells remarks  
 10:20 AM – 10:21 AM Harvey Hollins introduces Senator Jim Ananich  
 10:21 AM – 10:26 AM Senator Jim Ananich remarks  
 10:26 AM – 10:27 AM Harvey Hollins introduces Ridgway White of Mott Foundation  
 10:27 AM – 10:32 AM Ridgway White gives remarks  
 10:32 AM – 10:42 AM Q&A from the podium (SW to moderate)  
 10:42 AM Event concludes; Governor departs

#### OPEN Press

#### High level points:

- Protecting the health and safety of our residents in Flint and across Michigan is always our top priority.
  - All Michigan residents need access to safe, clean water
- That's why today, in consultation with health and water experts in our state agencies, I'm advocating reconnecting the Flint drinking water with the Great Lakes Water Authority.
- I'm recommending to my partners in the Legislature that the state government provide \$6 million of the needed \$12 million to reconnect with authority.
  - The Flint city government has agreed to cover \$2 million of this cost, and the Charles Stewart Mott Foundation is generously offered to donate \$4 million.
- What you are seeing here today is a community coming together to work toward solving a problem.
  - I appreciate the assistance of Mayor Walling, and the U.S. Environmental Protection Agency.
  - This is a collaborative approach, and I appreciate that community organizations including the United Way and come forward to assist.

#### Attachments:

1. Briefing
2. FAQs for Media Q&As
3. Press Release



Briefing.pdf



FAQs for Media  
Q&As.pdf



Press Release.pdf

\*\*\*Staff/Detail\*\*\*

Venue POC: Kathryn Thomas (mobile?)

PPI

Security POC: Phil Snyder (mobile)

PPI

Advance: CLU

Comms: All

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Call with Lisa Wozniak (Lisa to call MBT's Number)  
**Location:** Telephone

**Start:** Thu 10/8/2015 3:30 PM  
**End:** Thu 10/8/2015 4:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Pallone, Maggie (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Thelen, Mary Beth (DEQ)

Lisa Wozniak will call the Director on Thursday, October 8 at 3:30 p.m .

Maggie to join the Director in this call.

Thank you.

Mary Beth

MBT's Contact: Tracy at Lisa's office 734-222-9650.



## **Olszewski, Rosemarie (DEQ)**

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**Subject:** DEQ Team - Next Steps at 4:00  
**Location:** Great Lakes Conference Room

**Start:** Thu 10/8/2015 4:00 PM  
**End:** Thu 10/8/2015 5:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Shekter Smith, Liane (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Pallone, Maggie (DEQ); Wyant, Dan (DEQ); Benzie, Richard (DEQ); Krisztian, George (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ)

**Importance:** High

Director Wyant has requested a next steps meeting at 4:00 today with the DEQ team:

Director Wyant  
Jim Sygo  
Maggie Pallone  
George Kritztian  
Brad Wurfel  
Karen Tommasulo  
Liane Shekter Smith  
Steve Busch  
Richard Benzie  
Mike Prysby  
Pat Cook  
(Liane, if I'm missing someone, please forward).

Thank you for adjusting your schedule to accommodate this.

Mary Beth

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Wyant/Zimmer/Lyon - Action Plan Touch Base 15 minutes at 9:40  
**Location:** Telephone - Conference Call In Number - See Text of Mtg Notice

**Start:** Mon 10/12/2015 9:40 AM  
**End:** Mon 10/12/2015 9:55 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Lyon, Nick (DHHS); Zimmer, Mike (LARA)  
**Optional Attendees:** Pallone, Maggie (DEQ); Thelen, Mary Beth (DEQ); Burton, Diane (LARA); Grijalva, Nancy (DHHS); Shaler, Karen (DEQ)

Directors Zimmer/Lyon/Wyant to touch base on action plan.

Monday, October 12, 9:40-9:55

Call In Number is:

**PPI**

Dan Wyant will have the host number.

Contact Person: Mary Beth Thelen 284-6712, Diane Burton, and Nancy G.

Thanks.  
MBT

**Olszewski, Rosemarie (DEQ)**

---

**Subject:** Lead Numbers Discussion with DEQ Team - Preliminary and Deliberative: Not subject to FOIA (Meeting Notice)  
**Location:** CH-6S-GREAT-LAKES  
**Start:** Mon 10/12/2015 2:30 PM  
**End:** Mon 10/12/2015 3:00 PM  
**Recurrence:** (none)  
**Meeting Status:** Accepted  
**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Tommasulo, Karen (DEQ); Krisztian, George (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ)  
**Importance:** High

**Preliminary and Deliberative: Not subject to FOIA (Meeting Notice)**

DEQ team to meet with George and the Director from 2:30-3:00 (and then maybe again from 3:00-3:30 if needed).

FYI: Director has a 3:00 Senator conference call.

I think I remembered everyone – if not, please let me know.

Thanks.

MBT

**Olszewski, Rosemarie (DEQ)**

---

**Subject:** Senator Jim Ananich/Wyant/Pallone - RE: Action Plan  
**Location:** Telhone - Dan's Office - Use MBT's Call In Number

**Start:** Mon 10/12/2015 3:00 PM  
**End:** Mon 10/12/2015 3:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Pallone, Maggie (DEQ); Krisztian, George (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)

George, Director and Maggie would like you to participate in this call with them. However if you are out you can call in or they can handle.

Thanks.

=====

Use MBT's call in Number:

**PPI**

Dan Wyant will have the Host Number

Maggie, Shawn of the Senator's office requested a call in number in case the Senator wanted to include some of his staff.

MBT's Contact: Shawn on Friday at 373-0142

=====

Thank you for your meeting request. Maggie Pallone has asked that I schedule.

I talked with Shawn of your office and we have set up a conference call for Monday, October 12, 3:00. I also gave Shawn the call in number.

Thank you. Have a great weekend.

Mary Beth Thelen  
DEQ  
517-284-6712

-----Original Message-----

From: Andrew Leavitt [mailto:[ALeavitt@senate.michigan.gov](mailto:ALeavitt@senate.michigan.gov)]  
Sent: Friday, October 9, 2015 2:52 PM  
To: Pallone, Maggie (DEQ) <[PalloneM@michigan.gov](mailto:PalloneM@michigan.gov)>

Cc: Michelle Carnevale <[MCarnevale@senate.michigan.gov](mailto:MCarnevale@senate.michigan.gov)>

Subject: Meeting w/ Director Wyant

Hi Maggie,

I spoke with Director Wyant yesterday and he indicated a desire to get some time with Jim next week to go through the action plan in greater detail.

I have Cc'ed Michelle from our office to handle scheduling on our end. Can you put her in touch with Dan's scheduler?

Sent from my iPhone

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Ali of NPR  
**Location:** Telephone Interview at 4:00 -Ali to call Dan's Land Line in Office

**Start:** Mon 10/12/2015 4:00 PM  
**End:** Mon 10/12/2015 4:30 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)

Brad to attend in the Directors' office.

Thank you.

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Call with Superintendent Brian Whiston of Education  
**Location:** Directors' Office 241-0494 or (maybe Directors' CR)

**Start:** Mon 10/12/2015 4:30 PM  
**End:** Mon 10/12/2015 5:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ)

Director Dan Wyant will call Superintendent Brian Whiston at 4:30 today at 241-0494.  
(they will do their own meeting notice)

**George and Liane:** Director asked that you participate in this call with him – his office.

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Mark Bayshore, WKAR Radio Interview  
**Location:** Mark Bayshore will call Mary Beth's number and Mary Beth to transfer to the Directors' desk line.  
  
**Start:** Tue 10/13/2015 8:00 AM  
**End:** Tue 10/13/2015 8:15 AM  
  
**Recurrence:** (none)  
  
**Meeting Status:** Accepted  
  
**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Tommasulo, Karen (DEQ); Wurfel, Brad (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Pallone, Maggie (DEQ)

Mark Bayshore will call Mary Beth's line at 8:00 and she will transfer to the Director's desk line.

Brad or Karen to be available in the Director's office if possible.

Maggie – FYI only.

This has been scheduled for Tuesday, October 13, 8:00 a.m. (MBT via Brad)



## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Rep Pscholka re: Flint Water  
**Location:** 351 CB

**Start:** Tue 10/13/2015 9:30 AM  
**End:** Tue 10/13/2015 10:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Pallone, Maggie (DEQ)  
**Required Attendees:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)

Christine

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** FOIA Denial and Lawsuit  
**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Tue 10/13/2015 11:15 AM  
**End:** Tue 10/13/2015 11:45 AM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Vorce, Susan (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Pallone, Maggie (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ)  
**Optional Attendees:** Anderson, Madhu (DEQ); Schinderle, Jack (DEQ); Devereaux, Tracy Jo (DEQ); Krisztian, George (DEQ); Feuerstein, Heather (DEQ)

**Importance:** High

Director would like to discuss a FOIA Denial and Lawsuit. Let's try for 11:15. If I change the time earlier (depends on the Directors' schedule) I will keep everyone posted.

Wants to discuss Executive and ODWMA records.

Participants:  
Director  
Sygo  
Karen Shaler  
Mary Beth  
Susan Vorce  
Brad Wurfel  
Maggie  
Liane Shekter Smith (or acting)  
Steve Busch (or others as appropriate)

Others: Optional – FYI.

If anyone needs to call in, please let me know and I can either conference in or provide a call in number.

Thanks.

MBT

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Preliminary and Deliberative - Not Subject to FOIA: - Discussion of Lead Results  
**Location:** Director's Office (Or I may bump the Director's CR)

**Start:** Tue 10/13/2015 3:15 PM  
**End:** Tue 10/13/2015 4:00 PM

**Recurrence:** (none)

**Meeting Status:** Meeting organizer

**Organizer:** Wyant, Dan (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Busch, Stephen (DEQ); Krisztian, George (DEQ); Rosenthal, Adam (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Thelen, Mary Beth (DEQ); Shekter Smith, Liane (DEQ); Rennaker, Joanne (DEQ); Shaler, Karen (DEQ)

Tuesday, October 13, 3:15-3:45/4:00.

Meeting needed with the following today:

Dan Wyant  
George Krisztian  
Steve Busch  
Adam Rosenthal

Others: FYI only.

Thank you.

Mary Beth

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** DM/EC/JA/RB/JW/JR/HH/SW/DM/DW/NL/GL/DP or DA or ML re Flint next steps  
**Location:** Governor's Conference Room - 2nd Floor Romney (call in number below)

**Start:** Wed 10/14/2015 11:30 AM  
**End:** Wed 10/14/2015 12:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Agen, Jarrod (GOV)

**Required Attendees:** Muchmore, Dennis (GOV); Clement, Elizabeth (GOV); Baird, Richard (GOV); Walsh, John (GOV); Redford, James (GOV); Hollins, Harvey (GOV); Wurfel, Sara (GOV); Murray, David (GOV); Wyant, Dan (DEQ); Lyon, Nick (DHHS); Lasher, GERALYN (DHHS); Posthumus, Dick (GOV); Ackerman, Darin (GOV); Lange, Michelle (GOV); Rospond, Laurie (GOV); Thomet, Ruth (GOV); Thelen, Mary Beth (DEQ); Grijalva, Nancy (DHHS); Hall, Jean (GOV); VanSickle, Michele (GOV); Clayton, Stacie (GOV)

**Optional Attendees:** Wells, Eden (DHHS)



MDHHS Action Plan  
Flint EBL.DO...

Conference Number -

Access Code -

Host Code -  (Jarrod to host)

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Call with Susan Hedman - Call Susan's Cell Number  
**Location:** Call Susan Hedman's Cell Number  
  
**Start:** Wed 10/14/2015 5:00 PM  
**End:** Wed 10/14/2015 5:30 PM  
  
**Recurrence:** (none)  
  
**Meeting Status:** Accepted  
  
**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ)

Susan would like to talk with you today. You can contact her on your cell.

This is for 5:00 EST.

**Thanks.**

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Meeting with the Director  
**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Thu 10/15/2015 11:30 AM  
**End:** Thu 10/15/2015 12:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wurfel, Brad (DEQ); Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Shekter Smith, Liane (DEQ); Krisztian, George (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Feuerstein, Heather (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)

**Importance:** High

Director needs to meet with the following ASAP. Let's try for 11:30-12:00

Director  
Sygo  
Liane  
Brad  
George

Thank you.  
Mary Beth

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Meet with Flint Schools Superintendent  
**Location:** 923 E. Kearsley Street, Flint 48503

**Start:** Fri 10/16/2015 1:00 PM  
**End:** Fri 10/16/2015 2:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Feuerstein, Heather (DEQ)  
**Required Attendees:** Krisztian, George (DEQ); Tommasulo, Karen (DEQ); Shekter Smith, Liane (DEQ); Dykema, Linda D. (DHHS); Edgerton, Shelly (LARA); Wells, Eden (DHHS)  
**Optional Attendees:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ) (WurfelB@michigan.gov); Devereaux, Tracy Jo (DEQ)

Mr. Tawwab, along with Deputy Superintendent Sharrece Farris and Tony Sitko, Director of Shared Services, will be attending the meeting with the Superintendent.

The meeting will take place in room 215 of the Flint Community Schools' Administration Building located at 923 E. Kearsley Street, Flint 48503.

There is no phone in this room so we can't do a conference call.

My contact is Monaca Wood 810-760-1249

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Marc Edwards Conference Call (Use Mary Beth's Call In Number)  
**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Mon 10/19/2015 10:00 AM  
**End:** Mon 10/19/2015 11:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Krisztian, George (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)';  
Tommasulo, Karen (DEQ); Pallone, Maggie (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Shaler, Karen (DEQ)

**Update:** Director has invited Senator Ananich and his Chief of Staff Andy Levitt to this conference call. I have provided them the call in number. I have also informed Marc Edwards that the Senator and Andy have been invited to participate. We will do this conference call in the Director's Conference Room.

-----

Per the Director's request, Mary Beth Thelen contact Marc Edwards on Thursday, October 15, 3:05 to schedule a conference call with the following:

Marc Edwards  
Director Dan Wyant  
Jim Sygo  
George Krisztian  
Karen Tommasulo  
Maggie Pallone (invited)  
Senator Jim Ananich (invited)  
Andy Levitt, the Senator's Chief of Staff (invited)

This is scheduled and confirmed for **Monday, October 19, 10:00-11:00** (although Marc sent me a meeting notice that shows a half hour).

**Dan Wyant to call Marc using Mary Beth's call in number which Mary Beth will provide to the Director on Monday.**

**Marc's number in case needed: 540-231-7236.**

I also reached out to Marc to let him know that the Director would meet with him in person next time he is in Michigan and if the Director is in town. Marc said he would not be in Michigan anytime soon (that he is aware of) but that he would keep it in mind and took my email and direct phone number. He appreciated the offer.

Thank you.



Mary Beth Thelen  
DEQ – Director's Management Assistant

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Paul W. Smith WJR - Dan to call 313-875-4480 at 7:14 a.m.  
**Location:** Dan Wyant to call 313-875-4480

**Start:** Tue 10/20/2015 7:14 AM  
**End:** Tue 10/20/2015 7:25 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ)  
**Optional Attendees:** Tommasulo, Karen (DEQ); Feuerstein, Heather (DEQ); Wurfel, Brad (DEQ)

**Importance:** High

Can to call 7:14 a.m.  
Dan to call 313-875-4480  
Paul W. Smith

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Wyant/Hedman/Kaplan - Task Force Discussion  
**Location:** Telephone - Susau to call MBT's Line. Director's Office OR Director's CR  
  
**Start:** Tue 10/20/2015 1:30 PM  
**End:** Tue 10/20/2015 2:00 PM  
  
**Recurrence:** (none)  
  
**Meeting Status:** Accepted  
  
**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Krisztian, George (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Pallone, Maggie (DEQ); Shaler, Karen (DEQ)

**Update:** George and Sygo to participate in this call – Director's office or Director's CR. Maggie is optional per the Director. Thanks.

Susan Hedman and Bob Kaplan will contact MBT's number at 284-6712 to talk with Director Wyant at 1:30 EST.  
RE: EPA's Task Force.

**Others:** I will check with the Director to see if you are needed for this phone call.

MBT's contact person is Felicia of Susan Hedman's Office.

They have requested Tuesday, October 20, EST.

Thanks.

## Olszewski, Rosemarie (DEQ)

---

**Subject:** RDS/DM/JA/EC/DW/NL/HH/MAnderson - Flint After Action Meeting  
**Location:** Governor's Office, Romney

**Start:** Wed 10/21/2015 9:00 AM  
**End:** Wed 10/21/2015 10:00 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** GovCalendar  
**Required Attendees:** VanSickle, Michele (GOV); Baird, Richard (GOV); Wisniewski, Wendy (GOV); Clement, Elizabeth (GOV); Muchmore, Dennis (GOV); Agen, Jarrod (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Lyon, Nick (DHHS); Grijalva, Nancy (DHHS); Clayton, Stacie (GOV); Hollins, Harvey (GOV); Anderson, Madhu (DEQ)

Ken Sikkema, Chris Kolb, Eric Rothstein, Dr. Matt Davis, Dr. Lawrence Reynolds (by phone)

**PPI**

Host: **PPI** – RH to host

### Agenda:

- 1) Introductions
- 2) Mission of Task Force
- 3) Background Info
- 4) Discussion of Timeline
- 5) Q & A from Task Force Members
- 6) Communications Strategy/Review Press Release

### Attachments:

1. JA Memo
2. Resumes
3. Press Release



Flint After Action  
Meeting.pdf...



Flint After Action  
Kolb, Davis...



Flint After Action  
Press Relea...

\*\*\*\*\*Staff\*\*\*\*\*

Chris Kolb [chris@environmentalcouncil.org](mailto:chris@environmentalcouncil.org)

Eric Rothstein [erothste@grg-ltd.com](mailto:erothste@grg-ltd.com)

Ken Sikkema [ksikkema@pscinc.com](mailto:ksikkema@pscinc.com)

Matt Davis [mattdav@med.umich.edu](mailto:mattdav@med.umich.edu)

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Initial Mtg of Internal After Action - Preliminary and Deliberative: Not Subject to FOIA:  
**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Thu 10/22/2015 1:00 PM  
**End:** Thu 10/22/2015 2:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Krisztian, George (DEQ); Anderson, Madhu (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Wurfel, Brad (DEQ); Shaler, Karen (DEQ); Pallone, Maggie (DEQ); Feuerstein, Heather (DEQ); Copen, Leigh (DEQ); Rennaker, Joanne (DEQ)

**Importance:** High

With busy schedules, 1:00 appears to be the best without changing too many schedules.  
It if goes over an hour, you may have to do some adjusting to your calendars. Thank you.

=====

A meeting is needed today with the following:

Director Wyant  
Jim Sygo  
George Krisztian  
Madhu Anderson  
Liane Shekter Smith  
Steve Busch  
Maggie Pallone (optional)  
Brad Wurfel (optional)

Thank you.

Mary Beth

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Wyant/Zimmer/Lyon - Touch Base Call - 15 minutes on Updates  
**Location:** Telephone - See text below for Call in number informaiton

**Start:** Thu 10/22/2015 4:30 PM  
**End:** Thu 10/22/2015 4:45 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Zimmer, Mike (LARA); Lyon, Nick (DHHS); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Krisztian, George (DEQ)  
**Optional Attendees:** Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Burton, Diane (LARA); Grijalva, Nancy (DHHS)

### **Call with Directors Wyant/Zimmer/Lyon**

George, please join Director Wyant on the call – his office.  
Jim Sygo, if available, please join Director Wyant on the call – his office.

**This is a touch base – updates call.**

Call In Number:

**PPI**

Dan Wyant will have the Host Number

Thank you.

Mary Beth Thelen  
284-6712

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Conference Call w/Susan Hedman  
**Location:** Director to call Susan at: 312-909-5585

**Start:** Mon 10/26/2015 3:30 PM  
**End:** Mon 10/26/2015 4:00 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** Shaler, Karen (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ)  
**Optional Attendees:** Thelen, Mary Beth (DEQ)

Susan Hedman needs 5 minutes with the Director. This conference call was confirmed via phone with Felicia Williams at 312-353-5697. Thanks.

Karen

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Meet with Auditor General Doug Ringler and his Deputy Director Laura Hurst  
**Location:** Directors' CR

**Start:** Tue 10/27/2015 3:30 PM  
**End:** Tue 10/27/2015 4:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Anderson, Madhu (DEQ)  
**Optional Attendees:** Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Copen, Leigh (DEQ)

Meeting with Auditor General Doug Ringler and his Deputy Director Laura Hurst. They requested a 20 minute meeting and will come here.

### **Participants per the Director:**

Director Wyant  
Jim Sygo  
George Krisztian  
Liane Shekter Smith  
Madhu Anderson (optional per the Director)

**We will meet with them late Tuesday afternoon to allow some of you travel time back from the Mid-Managers Meeting.**

Thank you.

Mary Beth



## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Need a meeting today RE Plan -  
**Location:** Capitol-View-Directors 7th floor - conference line: 1-877-873-8017 access 4989748#

**Start:** Wed 10/28/2015 11:00 AM  
**End:** Wed 10/28/2015 11:30 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Grijalva, Nancy (DHHS)  
**Required Attendees:** Eisner, Jennifer (DHHS); Wurfel, Brad (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Wyant, Dan (DEQ); Minicuci, Angela (DHHS); Lyon, Nick (DHHS); Lasher, GERALYN (DHHS); Shaler, Karen (DEQ); Wells, Eden (DCH); Rockefeller, Cheryl (DHHS)  
**Optional Attendees:** Thelen, Mary Beth (DEQ)

Nancy to host

Hey, friends. Any chance we can get a meeting this morning – sometime between 10:30 and 12:30 – to share our respective results and discuss rollout, protocols, numbers we like, and other issues of shared interest?

## Olszewski, Rosemarie (DEQ)

---

**Subject:** Internal After Action - Preliminary and Deliberative: Not Subject to FOIA  
**Location:** CH-65-DEQ-DIRECTOR

**Start:** Thu 10/29/2015 11:00 AM  
**End:** Thu 10/29/2015 12:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Devereaux, Tracy Jo (DEQ)  
**Required Attendees:** Krisztian, George (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Anderson, Madhu (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Optional Attendees:** Wurfel, Brad (DEQ); Shaler, Karen (DEQ); Pallone, Maggie (DEQ); Feuerstein, Heather (DEQ); Copen, Leigh (DEQ); Rennaker, Joanne (DEQ)

This was the best fit for all calendars. Please contact me ASAP if we need to reschedule.

Thanks,

*Tracy Jo*

Tracy Jo Devereaux  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
Constitution Hall, 4th Floor, South Tower, Pillar P8  
525 W. Allegan Street  
Lansing, Michigan 48933  
☎ 517-284-6544  
✉ [devereauxt@michigan.gov](mailto:devereauxt@michigan.gov)

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** Dinner with Susan Hedman, Regional Administrator, EPA  
**Location:** Susan Hedman's Office - 77 W. Jackson Blvd, Chicago (EPA Offices)

**Start:** Thu 10/29/2015 6:30 PM  
**End:** Thu 10/29/2015 8:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); Pallone, Maggie (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ)

Update: 6:30 p.m. Dinner with Susan Hedman and her deputy.  
Susan is unable to do an earlier time.

Location: Susan's Office, 77 W. Jackson Blvd, Chicago  
Call 312-886-3000 if you run into any problems.  
Security and staff will be available to enter into the building.

Susan Hedman will order pizza.

Thanks.

MBT

## **Olszewski, Rosemarie (DEQ)**

---

**Subject:** Internal After Action Discussion - with DEQ Staff/Director  
**Location:** CH-6S-DEQ-DIRECTOR

**Start:** Wed 11/4/2015 10:00 AM  
**End:** Wed 11/4/2015 10:45 AM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)

**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Pallone, Maggie (DEQ); Shekter Smith, Liane (DEQ); Krisztian, George (DEQ); Tommasulo, Karen (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Anderson, Madhu (DEQ)

**Optional Attendees:** Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ); Copen, Leigh (DEQ); Feuerstein, Heather (DEQ); Shaler, Karen (DEQ); Rennaker, Joanne (DEQ)

### Internal After Action Meeting

#### **Participants:**

Director  
Sygo  
George  
Liane  
Steve B.  
Brad  
Karen (invited depending on schedules)  
Maggie (invited depending on schedules)  
Madhu (invited depending on schedules)

Wednesday, November 4, 10:00. We will be scheduling these a 2-3 times per week and/or as needed.

Thank you.

Mary Beth

## **Olszewski, Rosemarie (DEQ)**

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**Subject:** DHHS/DEQ - Review Plan of Action  
**Location:** CH-6S-DEQ-DIRECTOR Constitution Hall, 6th Floor South Tower, Director Wyant's Conference Room.

**Start:** Wed 11/4/2015 3:00 PM  
**End:** Wed 11/4/2015 4:00 PM

**Recurrence:** (none)

**Meeting Status:** Accepted

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Eisner, Jennifer (DHHS); Wurfel, Brad (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Wyant, Dan (DEQ); Minicuci, Angela (DHHS); Lyon, Nick (DHHS); Lasher, Geralyn (DHHS); Wells, Eden (DHHS)  
**Optional Attendees:** Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Grijalva, Nancy (DHHS); Rockefeller, Cheryl (DHHS)

A DHSS/DEQ meeting has been scheduled for Wednesday, November 4, 3:00, Constitution Hall, 6<sup>th</sup> Floor South Tower, Director Wyant's Conference Room.

Nancy, if it is more convenient for our group to come to your office, we are happy to do so. Please advise.

Also, if Nick Lyon can call in, please advise and I can provide a number.

Others: Best if this can be in person.

Thanks.

Mary Beth  
284-6712



**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, September 17, 2015 3:39 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Flint Water Elected leader meeting ODWMA Final Draft documents  
**Attachments:** Flint-QuadrantDiagram-Draft.xlsx; City of Flint Background-Draft.docx; FAQ-Flint Customer Tap water lead levels-draft.docx

Please print 2.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, September 17, 2015 3:08 PM  
**To:** Wurfel, Brad (DEQ); Pallone, Maggie (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Sygo, Jim (DEQ)  
**Subject:** Flint Water Elected leader meeting ODWMA Final Draft documents

Brad and Maggie,

Attached are my final edits to the documents you requested. Let me know if you have questions or need anything else.

Stephen Busch, P.E.  
MDEQ Lansing District Coordinator  
Office of Drinking Water and Municipal Assistance  
Lansing and Jackson District Supervisor  
517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)

**DRAFT**  
**DRINKING WATER - LEAD - DISTRIBUTION OF RESPONSIBILITIES**

<p><b>Environmental Protection Agency</b></p> <p>Promulgation of Federal Safe Drinking Water Act Rules  1974 Safe Drinking Water Act      1991 Lead and Copper Rule      2000 Lead and Copper Rule Minor Revisions      2007 Lead and Copper Rule Short Term Revisions      ???? Lead and Copper Rule Long Term Revisions  Granting Primacy of Federal Regulations to States  Auditing of State Public Water Supply Programs  Provide Funding to States</p>	<p><b>Michigan Department of Environmental Quality</b></p> <p>Primacy - Michigan Safe Drinking Water Act and Administrative Rules  Oversight of public water systems  Inspections  Construction Permitting  Provide loans to water systems for public infrastructure improvements  State Laboratory Services  Laboratory Certification  Establish monitoring requirements, quantity and frequency  Verification of monitoring results and compliance determination  Notify water systems of Action Level Exceedance  Establish Water Quality Parameter Ranges, as necessary  State Reporting to EPA  Operator Training and Certification</p>
<p><b>City of Flint Water System</b></p> <p>Certified Operation of public water system  Establish Water Rates  Obtain construction permits  Reporting to MDEQ  Coordination of lead and copper sampling      Establishing a Tiered Sampling Pool      Providing Sampling Kits and Instructions to customers      Obtain signed statements from participating customers      Obtain sample analysis      Provide individual lead sample result to participants      Comply with Action Levels for lead and copper      Provide lead monitoring and notice Certification to MDEQ  Provide Annual Report (CCR) to all customers  Conduct Water Quality Parameter Monitoring  Recommend and Install Optimized Corrosion Control Treatment  Provide Public Notification, as necessary</p>	<p><b>Water Customers</b></p> <p>Participate in lead sampling as requested  Request lead testing if concerned  Follow lead sampling Instructions  Provide signed information on how sample was collected  Review individual result material  Follow instructions for reducing lead exposure  Replace private leaded service line and plumbing materials with lead-free products  Obtain plumbing permits and comply with code requirements  Pay Water Bills  Read Annual Report (CCR)  Read and follow Public Notification materials</p>



DRAFT 9/17/2015

#### City of Flint Water System Background

Water Service Land Area 34 square miles  
550+ miles of public water mains  
250+ miles of water mains 75+ years old  
70% of public water mains are unlined cast iron pipe  
Service population 99,763  
Service connections 32,900  
Flint Water System established in 1883  
Flint Water Treatment Plant #2 completed in 1954  
Connection to Detroit Water and Sewerage Department 1967  
Flint Water Treatment Plant #2 rehabilitated 1999 – 2005

#### City of Flint Timeline

April 2013 – Flint notifies DWSD of contract discontinuation and joins the Karegnondi Water Authority  
April 2013 – DWSD sets termination of Flint water service contract to April 17, 2014  
June 2013 – Karegnondi Water Authority groundbreaking  
June 2013 – Flint notifies DEQ of intent to use of Flint Water Treatment Plant full time with Flint River  
May 2014 – Flint stops purchasing DWSD water. Starts using the City of Flint WTP and Flint River  
August 2014 – Flint E.Coli Bacteria violation, Partial System Boil Water Advisory  
August 2014 – Disinfection Byproducts, DEQ requests preemptive Operational Evaluation  
September 2014 – Flint Total Coliform Bacteria violation, Partial System Boil Water Advisory  
November 2014 – Disinfection Byproducts violation begins  
January 2015 – 1<sup>st</sup> 6 month lead and copper sampling completed 100 samples, 90<sup>th</sup>% = 6 ppb  
July 2015 – 2<sup>nd</sup> 6 month lead and copper sampling completed 69 samples, 90<sup>th</sup>% = 11 ppb  
August 2015 – Disinfection Byproducts return to compliance  
August 2015 – Flint required by DEQ to recommend and install Optimized Corrosion Control Treatment  
  
January 2016 – Flint plans to have Optimized Corrosion Control Treatment operational  
July 2016 – Planned connection to Karegnondi Water Authority (Lake Huron water to Flint WTP)

## Frequently Asked Questions about Customer Tap water lead levels in the City of Flint – DRAFT 9/17

### **How was the Lead and Copper Rule Established?**

Under the Safe Drinking Water Act, EPA sets public health goals and enforceable standards for drinking water quality. The Lead and Copper Rule was established as a treatment technique rule because lead contamination of drinking water often results from corrosion of the plumbing materials belonging to water system customers, and there is no safe level of lead exposure. Therefore, instead of meeting a maximum contaminant level (MCL) for lead or copper, the rule requires public water supplies to take certain actions to minimize lead and copper in drinking water, to reduce water corrosivity and prevent the leaching of these metals from the premise plumbing. When that isn't sufficient, replacement of lead service lines under their control could be required. The current rule sets a monitoring action level (AL) which is not the same as an MCL. An MCL is based on health effects and feasibility; whereas an AL is a screening tool for determining when certain treatment technique actions are necessary.

### **What is the source of lead in customer tap water?**

Lead enters or leaches into water from lead service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings. Sampling at the Flint Water Treatment Plant has shown no lead in its treated water.

### **How is lead compliance determined?**

Compliance with the Action Level (AL) is based on a 90<sup>th</sup> percentile level calculation. For example, if 100 compliance samples were collected, the 90<sup>th</sup> percentile would be based on the result of the 11<sup>th</sup> highest lead sample for that monitoring period. Therefore, if more than ten percent of these compliance samples report lead above the AL of 15 parts per billion, a water supply has an AL exceedance. An exceedance is not a violation. It triggers other requirements which could include public notification, additional water quality sampling, and possibly further treatment.

### **What is the frequency of lead and copper sampling?**

Sampling periods can be as frequent as every six months to as little as once every three years. Reduction in sampling frequency is based on continued compliance with the Action Level and normally follows a progression of two six month periods, followed by annual sampling for three additional years, then one period every three years. Compliance samples can be collected at any time during six month sampling periods. When sampling is conducted annually or once every three years, all compliance samples are required to be collected between June 1 and September 30. This is done to capture warmest water conditions likely to produce the most leaching.

### **Why are customers asked to collect lead and copper samples?**

Compliance sampling for lead requires the water to, "have stood motionless in the plumbing system of each sampling site for not less than six hours." In order to achieve this requirement, residents are provided with detailed instructions and requested in general to collect the sample as the first thing they do when they wake up in the morning. It would be difficult for City water staff to otherwise collect such samples within the limits of the monitoring period.

### **How long has the City of Flint conducted lead monitoring?**

The City of Flint first began compliance monitoring for lead levels in customer taps as part of the Detroit Water and Sewerage Department (DWSD) consecutive system in January 1992 following the enactment of the Lead and Copper Rule. Two six month periods were collected in 1992. Sampling resumed with two six month periods in 1997 following the installation of Optimized Corrosion Control Treatment by

DWSD. A six month period was collected in 1998 and again in 1999. Annual sampling was completed in 2000, 2001, and 2002. Then triennial sampling was completed in 2005, 2008, and 2011 before the City of Flint changed sources and treatment in May 2014.

**Has the City's compliance monitoring ever exceeded the lead action level?**

No. While some individual samples do exceed the 15 part per billion (ppb) lead Action Level (AL), the AL is not a standard. Compliance is determined based on the 90<sup>th</sup> percentile value of all valid compliance sample results obtain during the established monitoring period. The City of Flint 90<sup>th</sup> percentile level has ranged between 0 ppb (2008 and 2011) and 15 ppb (1992), but never exceeded the AL. This includes the two most recent six month periods in 2014 and 2015 of 6 ppb and 11 ppb, respectively.

**Why are some samples not included in the compliance determination?**

Lead and Copper compliance sample sites must meet specific criteria that target customers with the highest potential for lead leaching. The sample must also be collected from a commonly used kitchen or bathroom tap, and in accordance with the provided sampling instructions. Customers that employ certain types of additional treatment are not allowed as such samples are not representative of water quality supplied by the water system. Samples must also be collected within the established monitoring period.

**What is the timeline for installation of corrosion control treatment?**

Under the Lead and Copper Rule treatment technique requirements, steps to complete the installation of optimal corrosion control treatment and follow-up monitoring are allowed to take up to five years. The City of Flint has committed to completing installation of optimal corrosion control treatment in less than six months.

**What will happen when Flint obtains water from the Karegnondi Water Authority?**

The City has committed to having Optimized Corrosion Control Treatment in place prior to its connection with the Karegnondi Water Authority (KWA). The water provided by KWA will come from a new source, Lake Huron. This change in source will require the City to return to two six month periods of lead and copper sampling and continued compliance with the Action Levels. The City of Flint water treatment plant will continue to operate with uninterrupted Optimized Corrosion Control Treatment.

**When is customer and public notification regarding lead required?**

Under the Lead and Copper Rule, public water supplies are required to provide individual lead results to those customers whose homes are sampled for compliance with the action level. Each of these customers is also provided information on actions they can take to limit lead exposure in their tap water. Furthermore, results from the most recent lead compliance monitoring determination are included each year in the annual consumer confidence report (CCR), also known as the annual water quality report that each water system must provide to all customers. As required by EPA, this report also includes general consumer awareness information regarding lead.

**How can I reduce lead in drinking water in homes with materials containing lead?**

Flush your pipes before drinking, and only use cold water for consumption. The more time water has been sitting in your home's pipes, the more lead it may contain. When water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until it becomes as cold as it will get. This could take as little as five to thirty seconds if there has been recent water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer. Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water

is likely to contain higher levels of lead. The two actions recommended above are very important to the health of your family. They should be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.

**How long would it take to replace lead service lines across Flint?**

The City has approximately 32,900 service connections in total. Over 15,000 of these connections are considered lead service lines. Even if many crews were contracted it could take up to 15 years to complete this work.

**What will it cost to have lead service lines replaced?**

Average costs have ranged from \$2,000 - \$8,000. Cost will vary depending on the length and size of service line that is needed, as well as the ground cover and soil conditions encountered.

With over 15,000 lead service lines at an estimated cost of \$4,000 for each replacement, a total cost could be \$60 million or more.

**Who is responsible for replacement of lead materials?**

Replacement of service pipes on private property and any leaded plumbing materials within the building structure is the homeowner/property owner's responsibility. The City of Flint owns the service pipe from the water main to the curb stop valve. This valve is normally located two feet in from the street curb.

**Why doesn't the City at least replace their portion of lead service lines?**

Partial lead service line replacement has been shown to exacerbate lead exposure, increasing the potential for harm, rather than reducing lead exposure. Only full lead service line replacement has been demonstrated effective in achieving long-term reductions in drinking water lead levels.

**How does blood lead level monitoring relate to customer tap water monitoring?**

Monitoring of blood lead levels takes into account all sources of lead exposure, not just exposure through drinking water. Water customers who have elevated levels of lead in their tap water, or who have a lead service line or plumbing materials containing lead are encouraged to be screened for blood lead level monitoring through their local county health department.

Blood lead level monitoring is overseen statewide by the Michigan Department of Health and Human Services. Their review of blood lead level testing results for the 12 month period just after the City of Flint changed its water source (May 2014 – April 2015) showed no significant change in the pattern of blood lead levels in comparison with levels reported for the previous three years. This data suggests the recent changes in source and treatment by the City of Flint water system have not increased lead exposure.

## Olszewski, Rosemarie (DEQ)

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, September 15, 2015 10:19 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Cc:** Shaler, Karen (DEQ)  
**Subject:** Fwd: EPA's response to Rep. Kildee re: Flint water  
**Attachments:** Hon. Daniel Kildee 09-15-15.pdf; ATT00001.htm

R,  
1 for Director  
1 for 2-2 EPA File  
1 for 3-1 US congressional file

Thanks.

Mb

Sent from my iPad

Begin forwarded message:

**From:** "Pallone, Maggie (DEQ)" <PalloneM@michigan.gov>  
**Date:** September 15, 2015, 7:25:03 PM EDT  
**To:** "Wyant, Dan (DEQ)" <WyantD@michigan.gov>, "Thelen, Mary Beth (DEQ)" <THELENM2@michigan.gov>, "Howes, Sarah (DEQ)" <HowesS1@michigan.gov>, "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov>, "Benzie, Richard (DEQ)" <BENZIER@michigan.gov>, "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov>, "Sygo, Jim (DEQ)" <SygoJ@michigan.gov>  
**Subject:** Fwd: EPA's response to Rep. Kildee re: Flint water

Begin forwarded message:

**From:** "Fortin, Denise" <Fortin.Denise@epa.gov>  
**Date:** September 15, 2015 at 6:28:38 PM EDT  
**To:** "Pallone, Maggie (DEQ)" <PalloneM@michigan.gov>  
**Cc:** "Beckmann, Ronna Erin" <beckmann.ronna@epa.gov>, "Deamer, Eileen" <deamer.eileen@epa.gov>  
**Subject:** EPA's response to Rep. Kildee re: Flint water

Here you go, Maggie. I'll be sending this letter to Jordan Dickinson shortly.

Please keep me posted on the location for Monday's meeting.

Thanks,  
Denise

Denise Fortin  
Congressional Liaison  
Office of Regional Administrator  
U.S. Environmental Protection Agency  
312-886-9859



United States Environmental Protection Agency  
Regional Administrator  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3590

SEP 15 2015

The Honorable Daniel Kildee  
Member, U.S. House of Representatives  
Washington, D.C. 20515-1313

Dear Congressman Kildee:

Thank you for your September 9, 2015 letter regarding drinking water quality in the City of Flint. EPA is actively working with the Michigan Department of Environmental Quality (MDEQ) to help the City provide clean and safe water.

Consistent with the recommendations in the internal memorandum cited in your letter, EPA is working with MDEQ to monitor Flint's compliance with the federal Lead and Copper Rule. On August 17, 2015, MDEQ notified Flint that additional treatment will be required to optimize corrosion control and the City is taking steps to do so. Experts from EPA's Office of Research and Development are providing technical assistance to Flint to implement those corrosion control improvements.

Flint residents who are concerned about lead in drinking water may request water sampling by the local water utility. General information about lead in drinking water and tips to reduce lead exposure are available at <http://water.epa.gov/drink/info/lead/index.cfm>

Again, thank you for your letter. We look forward to a more detailed discussion at the meeting that is being set up on Monday. In the meantime, if you have further questions, please contact me or your staff may contact Denise Fortin or Ronna Beckmann, the Region 5 Congressional Liaisons, at (312) 886-3000.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Hedman".

Susan Hedman  
Regional Administrator

**Thelen, Mary Beth (DEQ)**

---

**From:** Curt Guyette <cguyette@aclumich.org>  
**Sent:** Tuesday, September 22, 2015 1:33 PM  
**To:** Wurfel, Brad (DEQ)  
**Cc:** Wyant, Dan (DEQ)  
**Subject:** Flint water questions  
**Attachments:** MDEQ Questions 9-22-15.docx  
  
**Importance:** High

Mr. Wurfel,

Attached are a few questions regarding the MDEQ's oversight of Flint's Lead and Copper Rule monitoring program.

I would appreciate it if you would provide me answers by the end of the day Thursday, Sept. 24.

Feel free to call me either at work (313-578-6834) or on my cell phone ( PPI ) if you have questions or need anything clarified.

Sincerely,

Curt Guyette



Dear Mr. Wurfel,

In a February 27, 2015 email to Jennifer Crooks and Miguel Del Toral of the U.S. EPA, the MDEQ's Stephen Busch wrote that the city of Flint "has an optimized corrosion control program."

According to a recent interview with Flint Public Work's director Howard Croft, there is currently no corrosion control plan in place in Flint, and that it was MDEQ's decision not to use corrosion control additives, as Detroit does, at the time of the changeover to the Flint River in April 2014, and that none have been used since. It appears that Mr. Busch told the EPA something that wasn't true.

I'm writing to ask you to clear up the discrepancy between what Mr. Busch told the EPA, and what Mr. Croft is now saying.

- What, if any, Optimized Corrosion Control has been in place in Flint since the changeover to the Flint River in April 2014?
- If implemented, when did that program begin?
- What are the specific details of that optimized corrosion control program, if it did in fact exist? That is to say, what chemicals were used to control corrosion in Flint's water infrastructure?

In addition, according to my understanding of the law, the city of Flint, operating under the oversight of the MDEQ, was supposed to (a) have had a 120-home sample pool to draw from when choosing homes to sample as part of the EPA's Lead and Copper Rule compliance monitoring and (b) that the city was required by law to re-test those same 100 homes during the second round of testing that took place from Jan. 1 to June 30 2015.

- Did the city of Flint ever provide the MDEQ with that 120 homes sample pool? Will the MDEQ make that list available if in its possession?
- Why did the MDEQ certify that Flint followed proper testing protocol when only 13 of the homes tested during the first round (July 1 to Dec. 31, 2014) were re-tested during the second round?
- Why is this not a violation of the federal LCR testing protocols?
- Why were all 13 of those homes under the federal action level for lead and copper, while none of the homes over the action level were re-tested during the second round?

Mr. Del Toral of the EPA specifically said in a communication with MDEQ that a sample from the Walters home at 212 Browning Ave. in Flint should be included in the homes used to determine whether Flint is in compliance with the LCR.

That home was included in the original list of 71 homes the city of Flint provided to MDEQ, but the MDEQ deleted that home from its final report.

It has been asserted that this home had a whole house filter, but according to Lee-Anne Walters she was instructed by Flint officials to disable the filter prior to taking the water sample that showed lead levels to be far above the federal action limit.

- What is the DEQ's justification for not following the U.S. EPA's specific guidance to include this home in its report showing that Flint is in compliance with federal regulations regarding lead levels in water?

I would appreciate an answer to these questions by the end of the day Thursday, Sept. 24.

Thank you for your assistance in this important matter.

Sincerely,

Curt Guyette

Investigative reporter

ACLU of Michigan

Work number: 313-578-6834

Cell phone number: PPI



AG \_\_\_\_\_ Communications \_\_\_\_\_  
Chief Deputy \_\_\_\_\_ A. Cropsey \_\_\_\_\_  
M. Schneider \_\_\_\_\_  
Date Original to Opinions Division 9-30-15

mbt

34TH DISTRICT  
STATE CAPITOL  
P.O. BOX 30014  
LANSING, MI 48909-7514  
PHONE: (517) 373-8808  
FAX: (517) 373-5997  
E-MAIL: sheldonneeley@house.mi.gov

MICHIGAN HOUSE OF REPRESENTATIVES

**SHELDON A. NEELEY**  
ASSISTANT DEMOCRATIC WHIP  
STATE REPRESENTATIVE

COMMITTEES:  
HEALTH POLICY  
LOCAL GOVERNMENT  
TRANSPORTATION AND  
INFRASTRUCTURE

September 29, 2015

Attention: Honorable Bill Schuette, Attorney General  
State of Michigan

DEPT. OF THE  
ATTORNEY GENERAL

SEP 30 2015

Assigned to \_\_\_\_\_

As I took my place in this honorable legislative body for the first time, I carried with me the many needs and concerns of a stressed community. These concerns were richly woven in to the very fabric of my experiences on Flint City Council where I worked to lighten the burdens of a working class community.

Once again, I make the appeals I made in my initial fight for the community. As a councilman, working for a city under the control of a state authorized Emergency Financial Manager, I indicated the need for a forensic audit to address inconsistencies with the use of our financial resources. This request was eventually denied by the Emergency Financial Manager. It became painfully clear that the City's elected officials would have no relevant voice in meaningful decision making.

The Emergency Financial Manager would make a unilateral decision to shift the stable and sufficient water system source from Detroit Water and Sewer Department and replace it with the untested Flint River as a primary water source. This was a decision that I strongly objected to.

Since transitioning to the Flint River, the citizens of Flint have suffered serious health issues as a result of poor water quality. We have seen elevated TTHM, e-coli bacteria and at present lead and copper changes. The most recent problems are indicative of a lack of proper corrosion treatment. To some it seems that Flint has a water supply of a "third world country" while living near one of the greatest water sources in the world "The Great Lakes".

Most recently, this matter of water quality, affordability and culpability was heard in the Seventh Circuit Court by Judge Archie Hayman where he effectively ruled in favor of the plaintiffs. And, equally important is the recent independent findings by Virginia Tech and the Medical Doctors Group who cited serious problems with the quality of water in the City of Flint.



34TH DISTRICT  
STATE CAPITOL  
P.O. BOX 30014  
LANSING, MI 48909-7514  
PHONE: (517) 373-8808  
FAX: (517) 373-5997  
E-MAIL: sheldonneeley@house.mi.gov

MICHIGAN HOUSE OF REPRESENTATIVES

**SHELDON A. NEELEY**  
ASSISTANT DEMOCRATIC WHIP  
STATE REPRESENTATIVE

COMMITTEES:  
HEALTH POLICY  
LOCAL GOVERNMENT  
TRANSPORTATION AND  
INFRASTRUCTURE

After calling for many inquiries and meetings with the Michigan Department of Environmental Quality, I find that we are no further along to a resolution of this problem than when we began. The responses by local and state departments responsible for the health and safety of a community have been unacceptable. My efforts to obtain appropriate information have been met with elusive replies.

**I make this request to urge the Attorney General's Office to investigate and determine if the City of Flint and/or the State of Michigan and its agents have culpability and responsibility for this unfortunate problem.** We have reached out to the Governor's Office for additional support and intervention. To date, we have had few sufficient responses.

Once again, I implore you to explore the many facets of this situation and the possible corruption surrounding the water problems plaguing the City of Flint to determine if there have been improprieties and maleficence committed against this historical community.

Respectfully,

Sheldon A. Neeley

## Thelen, Mary Beth (DEQ)

---

**From:** Muchmore, Dennis (GOV)  
**Sent:** Monday, September 28, 2015 2:27 PM  
**To:** Wyant, Dan (DEQ); Lyon, Nick (DCH); Hollins, Harvey (GOV)  
**Cc:** Wurfel, Sara (GOV); Wurfel, Sara (GOV); Lasher, GERALYN (DCH); Thelen, Mary Beth (DEQ)  
**Subject:** RE: Proposed Press Conference on Flint Drinking Water

Thank you, you're always ahead of us. I don't have any reservations about the PC, although as I mentioned I don't see any reason to have Mr. Sienko, as we have a top notch professional in Eden Wells and certainly Tim and GERALYN if need be.

**From:** Wyant, Dan (DEQ)  
**Sent:** Monday, September 28, 2015 7:18 AM  
**To:** Muchmore, Dennis (GOV) <[muchmored@michigan.gov](mailto:muchmored@michigan.gov)>; Lyon, Nick (DCH) <[LyonN2@michigan.gov](mailto:LyonN2@michigan.gov)>; Hollins, Harvey (GOV) <[hollinsh@michigan.gov](mailto:hollinsh@michigan.gov)>  
**Cc:** Wurfel, Sara (GOV) <[Wurfels@michigan.gov](mailto:Wurfels@michigan.gov)>; Wurfel, Sara (GOV) <[Wurfels@michigan.gov](mailto:Wurfels@michigan.gov)>; Lasher, GERALYN (DCH) <[lasherg@michigan.gov](mailto:lasherg@michigan.gov)>; Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)>  
**Subject:** Proposed Press Conference on Flint Drinking Water

Per the ongoing issues in Flint concerning their drinking water, I would offer the following recommendations. Let's discuss.

### Recommendation

Press Conference in Flint – Wednesday, Thursday or Friday.

### Participants

Mayor of Flint  
Dan Wyant – Michigan Department of Environmental Quality  
Nick Lyon – Department of Community Health  
Susan Hedman – Region 5 Administrator or EPA  
Harvey Hollins – Governor's office  
Local Public Health Department

Agree -  
Dan  
D

### Announcement

Federal – State – Local action plan to address Flint Drinking Water

1. Governor Snyder names Dr. Dean Sienko as Flint drinking water Public Health Advisor.
2. All Flint schools water will immediately be tested to ensure that drinking water is safe.
3. Advisories will be disseminated recommending citizens flush your cold water pipes, use only water from the cold water tap for drinking, cooking and especially for making baby formula.
4. Implementation of fully optimized corrosion controls in the Flint drinking water system.

Recommendations  
could be selected

5. Expanded water testing of at risk properties.
6. Offer water testing at no cost to Flint residents to assure water is safe.
7. Convene a safe drinking water " Technical Review Advisory" to ensure best technology, practices and science is being utilized, including EPA's expertise and assistance from their Office of Research and Development.
8. Offer bottled water and premixed formula if test results indicate high levels of lead.
9. Accelerate water system improvements to address replacement of lead service lines.

Dan Wyant, Director  
Department of Environmental Quality  
517-284-6700 (New Number)

DRAFT 9/17/2015

City of Flint Water System Background

Water Service Land Area 34 square miles  
550+ miles of public water mains  
250+ miles of water mains 75+ years old  
70% of public water mains are unlined cast iron pipe  
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November 2014 – Disinfection Byproducts violation begins  
January 2015 – 1<sup>st</sup> 6 month lead and copper sampling completed 100 samples, 90<sup>th</sup> = 6 ppb  
July 2015 – 2<sup>nd</sup> 6 month lead and copper sampling completed 69 samples, 90<sup>th</sup> = 11 ppb  
August 2015 – Disinfection Byproducts return to compliance  
August 2015 – Flint required by DEQ to recommend and install Optimized Corrosion Control Treatment  
January 2016 – Flint plans to have Optimized Corrosion Control Treatment operational  
July 2016 – Planned connection to Karegnondi Water Authority (Lake Huron water to Flint WTP)

August 17, 2015

→ April 30, 2014  
Flint Switched

→ June 24, 2015  
Del Tord  
Manno

Sept. 2 - Va Tech

→ August 17, 2015  
Required by DEQ  
Controlled

clean water



**Feuerstein, Heather (DEQ)**

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**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, September 22, 2015 1:49 PM  
**To:** Pallone, Maggie (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Cc:** Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ)  
**Subject:** FW: Flint water questions  
**Attachments:** MDEQ Questions 9-22-15.docx  
  
**Importance:** High

FYI

Dan Wyant, Director  
Department of Environmental Quality  
517-284-6700 (New Number)

---

**From:** Curt Guyette [<mailto:cguyette@aclumich.org>]  
**Sent:** Tuesday, September 22, 2015 1:33 PM  
**To:** Wurfel, Brad (DEQ)  
**Cc:** Wyant, Dan (DEQ)  
**Subject:** Flint water questions  
**Importance:** High

Mr. Wurfel,

Attached are a few questions regarding the MDEQ's oversight of Flint's Lead and Copper Rule monitoring program.

I would appreciate it if you would provide me answers by the end of the day Thursday, Sept. 24.

Feel free to call me either at work (313-578-6834) or on my cell phone PPI if you have questions or need anything clarified.

Sincerely,

Curt Guyette



## - The Action Plan -

- Testing in Flint public schools immediately to ensure that **drinking water is safe**, with testing also available at no cost to any other school in Flint.
- Offering **free water testing** to Flint residents to assure their drinking water is safe.
- Providing **free water filters** to residents with concerns or who are included in state assistance programs.
- Expanding **health exposure testing** of individual homes.
- Accelerating **corrosion controls** in the Flint drinking water system.
- Accelerating **water system improvements** to address replacing lead service lines.
- Expediting the completion of the **Karegnondi Water Authority** pipeline.
- Expanding a **Safe Drinking Water Technical Advisory Committee** to ensure the best technology, practices and science are being followed by adding an expert from the Environmental Protection Agency's Office of Research and Development to the group.
- Naming Dr. Eden Wells, chief medical executive for the Michigan Department of Health and Human Services, as the **Flint drinking water public health adviser**.
- Boosting a **comprehensive lead education program** to make sure residents have detailed information about how to protect themselves and their homes.

To get your water tested for free, please call the City of Flint Water Plant at (810) 787-6537 and then press 1.  
You can also email [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com).

Visit [www.mi.gov/FlintWater](http://www.mi.gov/FlintWater) for more information

# TAKING ACTION ON FLINT WATER

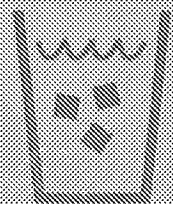
[www.mt.gov/flintwater](http://www.mt.gov/flintwater)

## - Tips for Flint Residents -

Lead plumbing is common in homes built prior to 1986, and anyone in the state with lead pipes in their home can take some extra precautions to minimize lead in their drinking water.

1.

Get your water tested at no cost to ensure water is safe. To get your water tested, please call the city of Flint Water Plant at (810) 787-6537 and then press 1.



2.

To ensure safe drinking water, you can also get a free filter. Please visit [mi.gov/FlintWater](http://mi.gov/FlintWater) to find where you can get a free filter.

3.

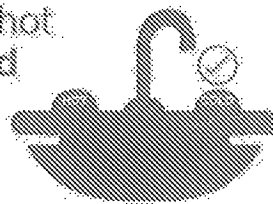
It takes time for lead to accumulate in drinking water from plumbing, and so flushing your pipes prior to using them can minimize your exposure.

To flush your pipes, run the water until it is as cold as it will go. This can take as little as 5 to 30 seconds if you have recently flushed the toilet or otherwise used water in your home, or as long as 2 to 5 minutes if you have not used any water in 24 hrs.

In the city of Flint, running the water for 5 minutes costs between 1 and 16 cents.

4.

Additionally, more lead gets into hot water than cold water. Use only cold water for drinking, cooking and making baby formula.



To get your water tested for free, please call the city of Flint Water Plant at (810) 787-6537 and then press 1. You can also email [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com)

Visit [www.mi.gov/FlintWater](http://www.mi.gov/FlintWater) for more information



## - The Action Plan -

- Immediately test all Flint public schools to ensure that **drinking water is safe**. Testing will also be available at no cost to any other school in Flint.
- **Expand health exposure testing** of individual residences.
- **Offer water testing** at no cost to Flint residents to assure water is safe.
- **Expedite optimizing corrosion controls** in the Flint drinking water system.
- **Assemble the "Safe Drinking Water Technical Advisory Committee"** to ensure the best technology, practices and science are being utilized, and add an expert from the EPA's Office of Research and Development to the group.
- **Accelerate water system improvements** to address replacement of lead service lines.
- Expedite completion of **Karegnondi Water Authority**.
- Gov. Rick Snyder names Dr. Eden Wells as the Flint Drinking Water Public Health Advisor to ensure safe drinking water.
- **Provide water filters** to residents of Flint.
- Expand a comprehensive lead education initiative.

To get your water tested for free, please call the city of Flint Water Plant at (810) 787-6537 and then press 1

Visit [www.mi.gov/FlintWater](http://www.mi.gov/FlintWater) for more information

## **Thelen, Mary Beth (DEQ)**

---

**From:** Clayton, Stacie (GOV)  
**Sent:** Wednesday, October 07, 2015 4:07 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Hollins, Harvey (GOV)  
**Subject:** FW: Flint City Council KWA Vote



Mary Beth,

Harvey is still waiting on hearing back from the city to get the original resolution but here are the mlive pieces that covered it from March 2013 until July 2013. The meeting when the vote was held was March 25, 2013. Here is what we have so far. I'll forward the actual resolution as soon as we receive it.

### **Stacie**

**March 25<sup>th</sup> 2013 Flint council supports buying water from Lake Huron through KWA**

[http://www.mlive.com/news/flint/index.ssf/2013/03/flint\\_city\\_council\\_again\\_delay.html](http://www.mlive.com/news/flint/index.ssf/2013/03/flint_city_council_again_delay.html)

The Flint City Council voted 7-1 to get 16 million gallons per day from the Karegnondi Water Authority.

7<sup>th</sup> Ward councilperson Dale Weighill was absent

3<sup>rd</sup> Ward councilperson Bryant Nolden opposed

The rest were in favor.

**March 25<sup>th</sup>, 2013 Flint City Council approves resolution to buy water from Karegnondi, state approval still needed**

[http://www.mlive.com/news/flint/index.ssf/2013/03/flint\\_city\\_council\\_approves\\_re.html](http://www.mlive.com/news/flint/index.ssf/2013/03/flint_city_council_approves_re.html)

Under the proposal, Flint would get 16 million gallons per day of raw water from Lake Huron, pipe it to Flint for treatment and then sell it to customers throughout the City. Another 2 million gallons per day would come from the Flint River and will be treated in Flint. DEQ told the city it needed to get 18 million gallons per day or there would have to be additional work done at Flint's water plant. Flint's water plant and the Flint River is currently the backup for Flint and Genesee County, however, the plant only operates four times per year.

**April 12<sup>th</sup> State gives Flint OK to join Karegnondi Water Authority project, but Detroit gets to make final offer**

[http://www.mlive.com/news/flint/index.ssf/2013/04/state\\_gives\\_flint\\_ok\\_t.html](http://www.mlive.com/news/flint/index.ssf/2013/04/state_gives_flint_ok_t.html)

The city of Flint has the state's blessing to join in construction of the planned Karegnondi Water Authority **pipeline project** once it reviews a final offer from the city of Detroit on Monday, April 15.

**April 19<sup>th</sup> Governor steps into water war; set to meet with Genesee, Flint, Detroit today**

[http://www.mlive.com/news/flint/index.ssf/2013/04/governor\\_steps\\_into\\_water\\_war.html#incart\\_river\\_de\\_fault](http://www.mlive.com/news/flint/index.ssf/2013/04/governor_steps_into_water_war.html#incart_river_de_fault)

The meeting comes in the same week that the Flint and Genesee County rejected a final offer to continue buying water from Detroit and two days after Detroit gave Flint a notice of termination of its 1965 water contract.

**April 19<sup>th</sup> Detroit gives notice: It's terminating water contract covering Flint, Genesee County in one year**

[http://www.mlive.com/news/flint/index.ssf/2013/04/detroit\\_gives\\_notice\\_its\\_termi.html](http://www.mlive.com/news/flint/index.ssf/2013/04/detroit_gives_notice_its_termi.html)

The city of Detroit has given notice that it's terminating a nearly 50-year-old contract for selling water to Flint and the county next year.

**July 23<sup>rd</sup> Flint River now an option for drinking water following Detroit's termination of contract**

[http://www.mlive.com/news/flint/index.ssf/2013/07/city\\_readying\\_water\\_plant\\_to\\_t.html](http://www.mlive.com/news/flint/index.ssf/2013/07/city_readying_water_plant_to_t.html)

The Flint River was not a viable option to provide drinking water to city residents when the water relationship between Flint and Detroit was stable. But river water might be used temporarily as the city's water supply now that Flint signed an agreement with the Karegnondi Water Authority and will get up to 18 million gallons per day of raw water in 2016 from Lake Huron. The Flint River hadn't been an option, city officials previously said, because upgrades to Flint's water plant would be too expensive, the river didn't provide enough capacity to serve Flint residents' water needs and the Michigan Department of Environmental Quality would not allow it.

## **Flint Water FY 2016 Supplemental Budget Request**

### **1. \$1 Million for Filters**

The \$1 million for filters will be used to purchase filters for households in Flint that do not qualify for assistance under any of the DHHS assistance programs. Filters for those residents will be paid for out of funding already in place in DHHS' budget. Each filter is \$20 and they were ordered in bulk through Home Depot. Filters are being distributed through local public health departments, with documentation filed for each filter handed out.

### **2. \$6 Million for switch from Flint River to DWSD**

The City of Flint estimates it will cost the City an additional \$1.3 million per month to use DWSD instead of the Flint River. The State and the City agreed to split the cost through June 2016, when the new Karegnondi Water Authority will be completed and Flint will switch to that water source. (\$1.3 million for 9 months)

### **3. \$1.35 Million for resources to do community Lead Exposure Testing**

DEQ, DHHS and LARA are assembling a team to go into schools, childcare facilities, and other high lead exposure health risk locations to test and follow up on lead exposure.

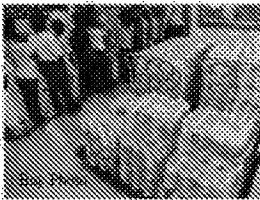
### **4. \$1 Million for evaluating sample results at the State Lab**

The new testing protocols for schools will require each faucet in the school to be tested and evaluated at the State lab. In addition, lead exposure testing in homes will result in tens of thousands more samples that will be need to processed. Each sample costs \$26 to process.

**Total Ask: \$9.35 Million, \$7.15 GF**

# Chemical testing could have predicted Flint's water crisis

By John Witsch and By Robin Erb, Detroit Free Press 14 a.m. EDT October 11, 2015



(Photo: Ryan Garza, Detroit Free Press)

Chemical tests could have predicted the corrosion in the pipes that is now being blamed for endangering the health of thousands of vulnerable Flint residents by elevating lead levels in their water supply, experts say.

As the city scrambles to reconnect to the Detroit water system, the absence of such testing on the Flint River water is one of many missed opportunities that might have lessened or avoided the crisis, they say.

"Any competent person should have seen this water will eat up iron and eat up lead," Marc Edwards, a Virginia Tech professor and national expert on pipe corrosion, told the Free Press. Edwards said his own research shows that Flint River water, without additional controls, corrodes the lead inside pipes at 19 times the rate of water piped from Detroit.



DETROIT FREE PRESS

Why are lead levels in children higher in 2 Flint ZIP codes?

<http://www.freep.com/story/news/local/michigan/2015/10/10/lead-danger-basics/73681934/>

Among red flags that popped up over the last 18 months:

- General Motors announced in October 2014 that it was pulling its engine plant off Flint water after workers there began noticing rust spots on newly machined parts. The city approved letting GM switch to water from Flint Township, but didn't change its own water treatment procedures.
- The University of Michigan-Flint alerted city officials that it found elevated lead levels in its water in January, prompting the school to shut off some drinking fountains and add water filters to others.
- Testing in the fall of 2014 found E. coli in the city's water system, prompting "boil water" notices. The city's procedures for killing the E. coli produced chemical by-products known as trihalomethanes, which can cause cancer with long-term exposure. The city had to adopt additional measures to reduce them.

"Common sense tells you that the Flint River is not your first choice of drinking water," said Shawn McElmurry, who teaches civil and environmental engineering at Wayne State University and has followed Flint closely.



DETROIT FREE PRESS

Q & A on Flint's water troubles

<http://www.freep.com/story/news/local/michigan/2015/10/10/flint-water-qa/73691500/>

Experts say the testing could have been done before the switch from the Detroit system. But officials from the Michigan Department of Environmental Quality note that that kind of testing isn't required under federal drinking-water rules and has never been done in Michigan. What's more, they said, the Flint River water, treated in the city's plant, was already approved as a backup supply in case of interrupted service from Detroit.

Other experts said the testing is more nuanced, part art and part science. Still, they acknowledge that by examining things such as the acidity of water and other factors, engineers could have estimated how much corrosion to expect once water from the Flint River was pumped into homes and businesses across the city.

"Not every engineer in our field could do it. It's a pretty specialized area," said David Cornwell, a Virginia-based engineering consultant and a technical adviser to the National Drinking Water Advisory Council, a group of experts that works with the Environmental Protection Agency on drinking water issues.

DETROIT FREE PRESS

Flint doctor makes state see light about lead in water





(<http://www.freep.com/story/news/local/michigan/2015/10/10/hanna-antisha-profile/73600120/>)

The fix now will cost \$12 million — a combination of money from the state, the city and the Flint-based non-profit C.S. Mott Foundation, which has pledged \$4 million to help pay Detroit for the water while Flint waits to connect to a new water authority in partnership with Genesee County.

#### Water woes began shortly after switch from Detroit

Flint began using Flint River water as its main supply in April 2014. Before that, it bought Lake Huron water that was treated and delivered by the Detroit Water and Sewerage Department. Detroit ended that deal one day after Flint voted to join Genesee County in forming the Karegnondi Water Authority, which plans to build its own Lake Huron intake and pipe the water to the Flint Water Plant.

Flint officials wanted to remain on Detroit's system, but the two sides couldn't agree on a price and a contract length.

Once the switch to river water was made, the city, which was operating under a state-appointed emergency financial manager, faced one problem after another. Residents packed city council meetings and held protest marches to voice their anger about water quality.

Experts say Flint's lead problems could have been held in check if the city had added phosphates to the water, as Detroit has done for years. The treatment doesn't eliminate lead entirely, but it does form a film over the pipes themselves, effectively sealing in the lead and reducing the amount in the water to acceptable levels.

But when Flint switched to river water, it didn't add phosphates. Instead it added lime to soften the water.

"The lime softening process has the added benefit of some corrosion control," said Liane Smith, chief of Michigan's Office of Drinking Water and Municipal Assistance.

Smith said that once the switch was made, the state began testing for lead and copper, as is required by the federal Environmental Protection Agency.

"Any new supply that comes along has to do two six-month rounds of monitoring for lead and copper out in their distribution system," Smith said. If those tests show corrosion, additional steps, such as perhaps adding phosphates, are supposed to be followed.

The first round of testing completed in December 2014 showed lead levels of 6 parts per billion. The second round, completed in June of this year, showed they had almost doubled to 11 parts per billion. The EPA requires a remediation plan when levels reach 15 parts per billion and can demand action even below that mark on systems that serve more than 50,000 people.

Cornwell said phosphates are considered more effective than lime softening and they don't raise treatment costs substantially. But they have side effects, he said.

"The negative is that nobody really likes phosphates out in the environment," he said, noting they can find their way into rivers and lakes, fueling algae blooms such as the ones in Lake Erie.

"There is more to it than saying we're just going to pump phosphates," Cornwell said. "You may have to make other adjustments."



A man crosses a bridge over the Flint River near the Hamilton Dam in downtown Flint on Thursday, Oct. 8, 2015. Flint has been getting its drinking water from the river since last year. (Photo: Ryan Garza, Detroit Free Press)

### Flint River water a challenge to clean up

Flint River water was always going to pose more treatment challenges than the cold, clear water that comes from the bottom of Lake Huron, experts said.

The river has been marked by decades of industrial pollution. Its tributaries channel farmland run-off into it and its temperature varies by season. Warmer water can promote bacteria growth. All of those factors make treating it to drinking-water standards more difficult.

"The city was doing the best it could" to clean up pollutants, Edwards said, but added that corrosivity was inevitable.

He blamed the problems on a lack of expertise rather than intentional wrongdoing.

"I think it started relatively innocently. They didn't understand testing and they didn't understand corrosivity," he said.

Last month, Edwards' research group released results of corrosion tests it conducted on Flint's water. For the test, researchers used copper pipe with lead solder, which is common in older homes.

The tests showed Flint River water without added phosphates corroded the lead at 15 times the rate of Detroit water. Even when phosphates were added, it corroded at 16 times the rate of the Detroit water.

"From the second it was switched, it was doomed from the lead problem," Edwards said.

When residents began complaining about the water, the city and state should have begun to rethink their testing, Edwards said.

Problems were evident soon after the switch.

In August last year, E. coli was found in the water and residents were urged to boil it before drinking it. The city treated it with disinfectant, but that produced by-products in the water known as trihalomethanes. Long-term exposure to them can cause cancer, so the city began making treatment adjustments.

Then as summer turned to fall, workers at Flint's GM engine plant began seeing rust on newly machined engine parts. GM's lab tests found high levels of chloride in the water used to wash down metal shavings and cool parts heated from the rapid machining action inside the plant, GM spokesman Tom Wickham said.

GM tried to treat the water in the plant. It had drinking water delivered and tankers brought water for operations, Wickham said.

But it eventually sought to connect to Flint Township's water system, which is supplied by Detroit.

In December the connection was finalized and Detroit water began flowing to the plant, via Flint Township.

In January 2015, lead was showing up at the University of Michigan's Flint campus. School leaders become concerned about the water supply after the city issued "boil water" advisories to kill E. coli and realized they'd never done routine, thorough water testing.

Tests in January and February showed elevated levels of lead and other problems in isolated areas —specifically in two infrequently used drinking fountains in two older buildings.

Follow-up testing found other elevated levels of lead, and those sinks and fountains then were either fitted with filters or removed, said Mike Lane, director of the environment, health and safety department.

He said officials suspected the problem was in their pipes but notified the city anyway.

In June, Miguel Del Toral of the Environmental Protection Agency drafted an internal memo noting the problems Flint had experienced with E. coli and the by-products of the chemicals used to treat it.

"A major concern from a public health standpoint is lack of corrosion control treatment in the city of Flint for mitigating lead and copper levels in the drinking water," Del Toral wrote.

The memo caused a stir when the American Civil Liberties Union exposed it. But the EPA told the Free Press on Friday that the memo was a draft that was never delivered to MDEQ officials, including Smith, whose names appear on it.

The EPA did say it discussed the concerns raised in the memo with MDEQ officials in July, but the agency did not respond immediately to a request for details.

### Leaching lead not unique to Flint

The problem of lead leaching into drinking water isn't unique to Flint. Across Michigan and around the country, pipes that carry water from the mains under the street into homes, businesses and schools often contain lead. Inside homes and business, many older plumbing fixtures and soldered pipes also contain it.

Cornwell said officials from across the nation have formed a working group to review the lead and copper rules and look for ways to improve them. Among the things being considered is a national effort to remove lead pipes from water systems.

But even if a national consensus formed around that idea, the process would take years, Cornwell said. A funding source for such a massive project also would be needed.

Still, he said, removing the pipes is the only surefire way to eliminate lead from the system.

"We can only do so much with water chemistry," he said. "We can only turn the knob so much."

Contact John Wisely: 313-222-6825 or [jwisely@freepress.com](mailto:jwisely@freepress.com)

Contact Robin Erb: 313-222-2708 or [rerb@freepress.com](mailto:rerb@freepress.com).

### TIME LINE

April 16, 2013: Flint signs agreement to join the Karegnondi Water Authority.

April 17, 2013: Detroit terminates contract with Flint, giving it one year to find a new water source.

April 24, 2014: Flint switches from Detroit water to Flint River water.

April 30, 2014: Flint closes all valves connecting to Detroit water supply.

June-Sept. 2014: Flint residents complain about smell, taste and discoloration of water.

Dec. 16, 2014: Michigan Department of Environment Quality cites Flint for exceeding limits on disinfection by-products.

Dec. 27, 2014: Flint's General Motors engine plant, citing high chloride levels in the water, switches off its hook-up to Flint, drawing water instead from neighboring Flint Township.

Jan. 9, 2015: Concerned about Flint's water warnings, University of Michigan's Flint campus begins testing its water, detecting lead in isolated,

infrequently used areas.

June 24, 2015: Environmental Protection Agency drafts a report raising concerns about lead in Flint's water system as a result of corrosion. It doesn't send the report, but discusses its concerns with MDEQ officials in July.

Sept. 24, 2015: Dr. Mona Hanna-Attisha releases data showing spike in blood-lead levels in Flint children.

Oct. 2, 2015: State officials tell room packed with reporters that there's a problem with Flint's water.

Read or Share this story: <http://on.freep.com/1LoJP7S>

**Thelen, Mary Beth (DEQ)**

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**From:** gongwerreports@gongwer.com on behalf of Gongwer News Service  
<gongwerreports@gongwer.com>  
**Sent:** Friday, October 02, 2015 2:46 PM  
**To:** Michigan\_State\_Employees\_updates@gongwer.com  
**Subject:** NEWS UPDATE--State To Contribute \$1M As Part Of Flint Water Fix



**GONGWER** Michigan  
The Capitol Record Since 1906

Friday, October 2, 2015, 02:45 PM

## **State To Contribute \$1M As Part Of Flint Water Fix**

In the short term, Flint residents will have access to water filters, some purchased with state funds, and in the longer term the city will be improving its corrosion controls to keep lead out of water supplies, state and city officials said today in unveiling a plan to address recent water safety concerns in the city.

Moving Flint back to getting water from the Detroit Water and Sewerage System is also still on the table for both state and local officials, but will require negotiations, both sides said.

Both sides said the water itself is not the source of lead and the city will be working in the coming years to replace the lead service lines that are the source.

Environmental Quality Direct Dan Wyant acknowledged that testing shows increased lead levels in the water since the city moved from the Detroit system in 2014, but he argued the problem was the switch and not the water source. He said one of the state's efforts is to ensure the city has sufficient corrosion controls in place so when it switches sources again away from the Flint River, the problem does not recur.

Mr. Wyant said the state has continued quarterly testing of the city's water source and those tests have continued to show no lead.

Eden Wells, chief medical officer for the state, said blood tests for children in the city did not change after the water change, but she said tests of children in two high-risk ZIP codes did, as tests by Hurley Medical Center had shown earlier, show increased blood lead levels in those areas after the water change.

But she and others said it was still not confirmed that the water was the source of the additional lead exposure.

Flint Mayor Dayne Walling said the city was still considering switching back to Detroit water while efforts to finish an agreement with Karegnondi Water Authority are completed. But he said the switch would cost the city up to \$2 million a month it does not have.

Mr. Wyant, asked if the state would cover those costs, said only that the state had committed \$1 million already toward the problem but that Governor Rick Snyder had said he would be willing to mediate discussions between the city and the Detroit system.

Gongwer News Service will have more on this story in the full Michigan Report.

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RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

### **Flint Drinking Water Events Timeline**


- April 2013 – Flint notifies DWSD of contract discontinuation and joins the Karegnondi Water Authority
- April 2013 – DWSD sets termination of Flint water service contract to April 17, 2014
- June 2013 – Karegnondi Water Authority groundbreaking
- June 2013 – Flint notifies DEQ of intent to use of Flint Water Treatment Plant full time with Flint River
- May 2014 – Flint stops purchasing DWSD water. Starts using the City of Flint WTP and Flint River
- August 2014 – Flint E.Coli Bacteria violation, Partial System Boil Water Advisory
- August 2014 – Disinfection Byproducts, DEQ requests preemptive Operational Evaluation
- September 2014 – Flint Total Coliform Bacteria violation, Partial System Boil Water Advisory
- November 2014 – Disinfection Byproducts violation begins
- January 2015 – 1st 6 month lead and copper sampling completed 100 samples, 90th% = 6 ppb
- July 2015 – 2nd 6 month lead and copper sampling completed 69 samples, 90th% = 11 ppb
- August 2015 – Disinfection Byproducts return to compliance
- August 2015 – Flint required by DEQ to recommend and install Optimized Corrosion Control Treatment
- September 24, 2015 – Hurley Children's Hospital data reveals high lead levels in Flint children
- October 8, 2015 – State screening results show elevated lead levels in Flint schools
- October 2015 (anticipated) – Flint switches back to DWSD for water
- July 2016 – Planned connection to Karegnondi Water Authority (Lake Huron water to Flint WTP)

**Thelen, Mary Beth (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, March 13, 2015 6:11 PM  
**To:** Hollins, Harvey (GOV)  
**Cc:** Wyant, Dan (DEQ)  
**Subject:** Info download per our conversation  
**Attachments:** Launch\_and\_Retrieval\_Methods.pdf; OTsp07\_TB.pdf;  
PotableWaterSeweragePipeLines.pdf; PPP\_General\_Brochure.pdf; USG Advanced Pipe  
Cleaning (Ice Pigging).pdf; 0707\_036.pdf; 150207\_155445\_COLLAGE-1.jpg

**Importance:** High



Harvey,

We've got two issues I wanted to update you on. After trying to do this all in a single email, I realized it gets messy. So this is the first of two.

The water quality question remains under consideration. I've had a couple meetings this week with our drinking water team. I will circle back and push them for a specific recommendation on a good retail filter. Thus far, they've presented a range of options and been uncomfortable going past that because a) we don't specialize in home filtration. We're in charge of commercial / municipal size systems. And b) most filtration systems remove contaminants and toxics and organics. There's no way to know for sure if a faucet model will effectively work on odor or color issues until someone installs it and tries it out. For that, we'd need a home that has reported discolored / smelly water. And for that, I'd imagine we'd need to connect with the city and see if they've got logs of residents who have made these complaints.

The other potential help that could come from the state -- and after conversations with our folks I maintain it might be the best help we can give them -- has to do with maintenance. Of the \$2 million announced in January from Treasury, \$900,000 was earmarked for developing a maintenance triage plan. As that comes together, the next step will be actual maintenance. This means replacing valves and rotten sections of pipe, but it also means "pigging" lines with an inline device that runs through water transmission lines and forces out any built-up... material. In coordination with bleeding stagnant water via hydrants, this would probably be the fastest, most effective way to address the discolored / odorific water.

Our department specialists working with Flint imparted in an internal meeting this morning that the city has been a little reticent to pig their lines because the system is in such a condition that they worry a valve opened won't close (and vice versa), and a line that is barely still functional might get blown by the pigging. Our position is that would be preferable -- maintenance, after all, is about addressing those very situations. But if funding can be identified, through SOM or some foundation benefactor, and we can convince the city to tackle the work, this would be a great way to spend it. The PDF files enclosed offer some more information about what this is, how it works, etc.

I'm still working to get a report of all the local municipal violations over the past two years. The two staff in the drinking water division who run those database searches are out of state this week, in Florida and Alaska respectively. Division assures me they'll get that report run as a priority upon return of those folks next week. In the meantime, here are some images (the Jpeg titled COLLAGE). It shows various conditions, mostly at mobile home parks around the state, where the water system



has failed. May or may not be of use, but if nothing else it exemplifies that this stuff happens, much as we try to make sure it does not.

This is email one of two. The other issue I will present in the next email. If it is at all possible, I'd suggest we need to assemble Treasury, MDCH, DEQ and Ambrose + RS team sometime Monday to get everyone briefed on what each agency is doing in Flint right now and what we may need to do next. Don't know if that meeting gets called by you or Dennis, but I think you and I agree that we need a united, coordinated team approach to develop quickly.

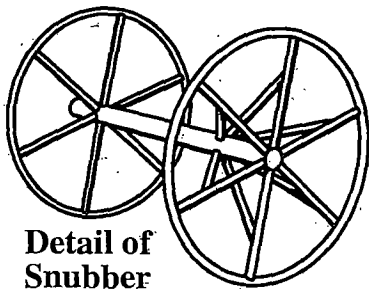
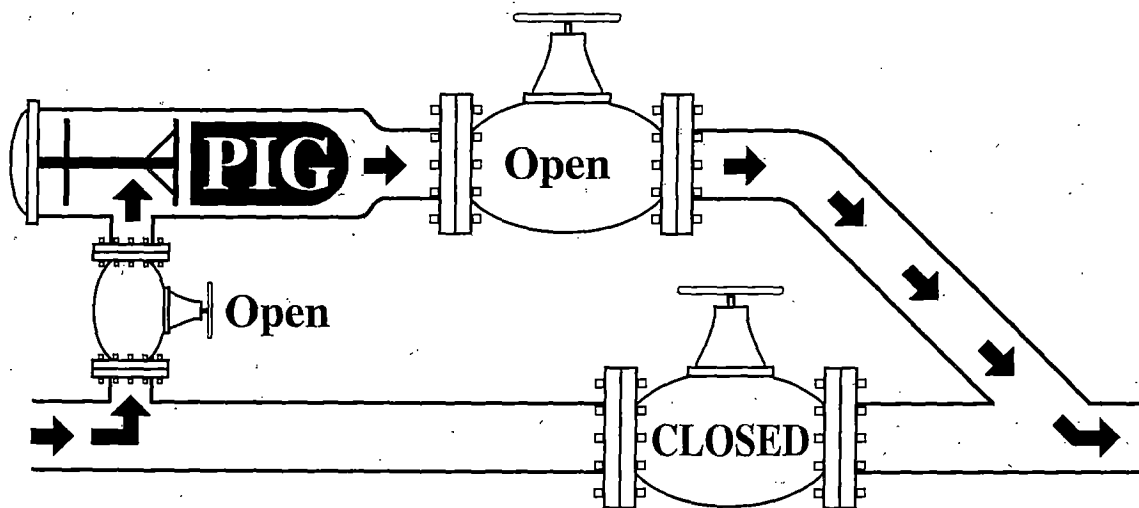
Thanks,  
b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713  
517-230-8006 cell

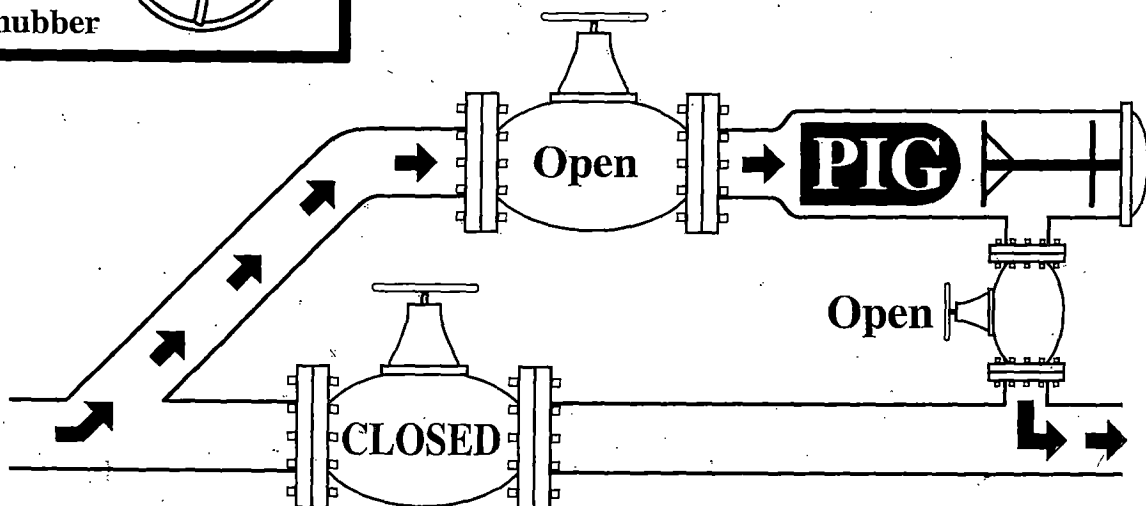
Pipeline Pigging Products Inc.

# LAUNCH & RETRIEVAL METHODS

## On Stream Entry



## On Stream Exit



# Flushing and pigging: basic waterline maintenance

**T**he daily operation of a public water system involves different aspects of many separate business and technical disciplines. In the course of a normal workday, operators will take a minimum of one to as many as 10 or 12 water samples. They may look for a water leak somewhere in the distribution system and will talk to three, four or more system customers about a variety of subjects. Operators may change out or add a customer water meter, repair a water leak, discuss purchases with sales reps and recheck meter readings on customer meters because "they just couldn't have used that much water." They might also have discussions with the project

engineer about an upcoming project, and still make time to do some maintenance to the distribution system and equipment.

Speaking of maintenance, there are many different types of equipment maintenance.

They go by the more mundane maintenance monikers of "Before Operations Maintenance Checks," or "During Operations Maintenance Checks" and the not to be left out, "After Operations Maintenance Checks." There is also the entirely separate category of "Preventive Maintenance Checks."

"Maintenance Shmaintenance," it all means the same thing!

Maintenance has to be performed on trucks, cars, meters, pumps, hand tools, power tools. It must also be performed on computers, buildings, wells, towers, clear wells, clarifiers and just about every component in

pipelines are buried in the cool, dark, damp underground. It is the wish and hope of everyone involved that they stay there, causing no problems — in total silence.

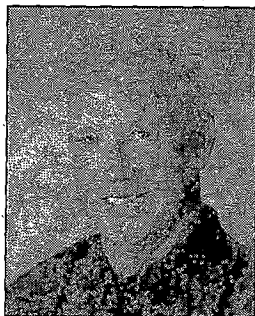
Unwanted buildup on the inside of most water distribution systems has been going on since the day the first valve was turned, and water started to flow through the system.

the entire system that has zero or more moving parts. Operators need to take care of system equipment if it is to provide long and reliable service.

In this article, the focus is on the part of the system that is nearly invisible and out of sight. It is the distribution system. These

Unwanted buildup on the inside of most water distribution systems has been going on since the day the first valve was turned, and water started to flow through the system. How does a system avoid this buildup or deal with it?

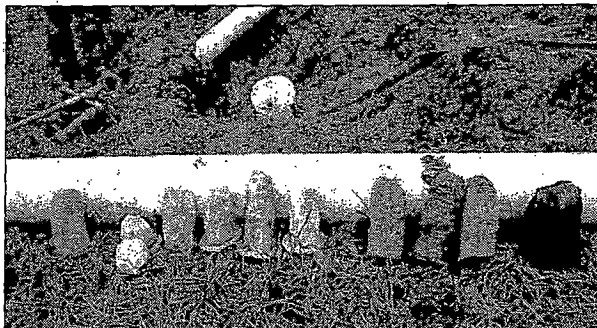
There are many things that can be done to correct this problem.



Gary Armentrout  
Technical Assistant



A Fort Scott, Kan. city crew inserts a soft pig into a 4-inch ductile iron line.



*Left: The before and after look of a soft pig in the hands of Fort Scott Water Distribution Supervisor Bill Lemke.*

*Above: Pigs in a row, 10 of 12 pigs used in a water line maintenance operation. The missing two pigs came out in pieces less than a quarter dollar in size.*

Some actions include changing the pH of the water, adding certain types of chemicals, and cleaning the inside of the pipe.

#### **Flushing, as a prevention**

The purpose of flushing of a water system is to remove any accumulated sediments or other impurities that have been deposited in the pipe. Flushing can also improve the flow of water, in effect, restoring the pipeline to its original capacity. Flushing is performed by

isolating sections of the distribution system and then opening flush or fire hydrants to allow a large volume of water to move through the isolated pipeline and scour out any sediment.

#### **Pigging, as a remedy**

Water mains may also be mechanically cleaned with the use of swabs or pigs, as well as a variety of other means. KRWA has published numerous articles on

the topic of pigging, describing the benefits of the projects from improved water quality to greater energy efficiency,

Pigs are devices that are forced through a section of line to scrape the accumulated

deposits off the inside of the pipe. Pigging is now routinely conducted at the time of installing new waterlines. While some might contend that a requirement to pig a pipeline adds to the cost, I respectfully suggest that if project circumstance were to prohibit a contractor from pigging, the cost should increase. It's been proven that pigging newly installed pipelines reduces water loss due

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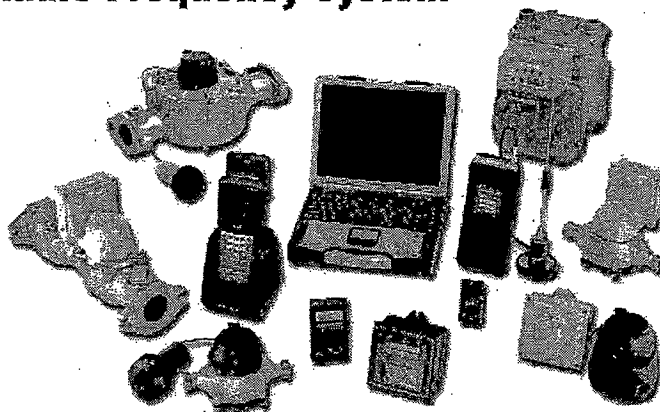
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## Flushing and pigging . . .



*The concentration of buildup is evident coming from the inside of a ductile iron main. After years of operation and depending on water quality, excessive mineral deposits often build up inside waterlines. Pigging can often remove the deposits, improving water quality and flow characteristics.*

When there is a buildup inside water lines that cannot be removed by simple flushing, pigging is a cost efficient, effective and environmentally friendly alternate. Most important, it is an economical alternate to

to flushing by 75%, to say nothing for the reduction of labor to complete the process of getting a new extension or pipeline into service.

line replacement. No matter what type of pipe is in the distribution system, there is a pig to do the job as needed. There are four basic types of pigs used today. Each pig

is designed for a specific job.

They are the polyurethane foam pigs, mandrel or mechanical pigs, solid cast urethane pigs and the high tech "smart pigs." If a system's water lines are cast iron or ductile iron, there is a very good chance of needing to pig at least some sections. The deposits in the pipelines can cause enough restriction that flow will be reduced. PVC lines normally are not subjected to the same degree of buildup as cast iron or ductile iron pipelines. PVC however will often have sediment at the bottom of the pipeline along with a thin coating covering the entire inside. A foam pig can normally remove this type of buildup. This type of pig can also be reused after traversing segments of PVC pipe. If, on the other hand the pig is used in a cast or ductile iron pipe, it is usually torn to shreds as it moves through the line. It is KRWA's experience that pigging small diameter iron pipelines may not be practical if there is a high degree of buildup. It may be impossible to remove hardened deposits from small diameter lines of one to four inches. KRWA techs have experienced pigging projects where a city system had some 4-inch pipeline with so much buildup that no daylight could be seen through even a 20-foot section.

Pipe maintenance is a very important part of the overall maintenance program of any water system. I suggest that systems practice flushing as a preventive measure and pigging as a remedy. If assistance is needed in setting up a maintenance program for a city or RWD, or there is a need to discuss flushing or pigging, contact KRWA at 785/336-3760 or e-mail KRWA at [krwa@krwa.net](mailto:krwa@krwa.net).



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# Tech Brief

PUBLISHED BY THE NATIONAL ENVIRONMENTAL SERVICES CENTER

## Line Pigging

By Zane Satterfield, P. E., NESC Engineering Scientist

### Summary

Line pigging is an internal pipe-cleaning process used to remove biofilms or other foreign matter from the inside of water pipes. If performed correctly, line pigging will renew the flow rates to restricted piping systems and reduce pumping pressures. This Tech Brief discusses some of the techniques and processes used in cleaning waterlines in distributions systems.

### Line Pigging

Line pigging (or line swabbing, as it sometimes known), is the process of cleaning distribution lines by inserting a small device known as a pig into the lines and pushing it through them. The term "pigging" originated in the gas and oil industry, where metal discs connected by a rod were moved through the oil pipelines to remove buildup of paraffin wax on the internal wall of the pipe. The action of metal on metal made a squealing noise like a pig and the name stuck. More and more, pigs are being used to clean pipelines in all types of industry including waterlines in municipal distribution systems.

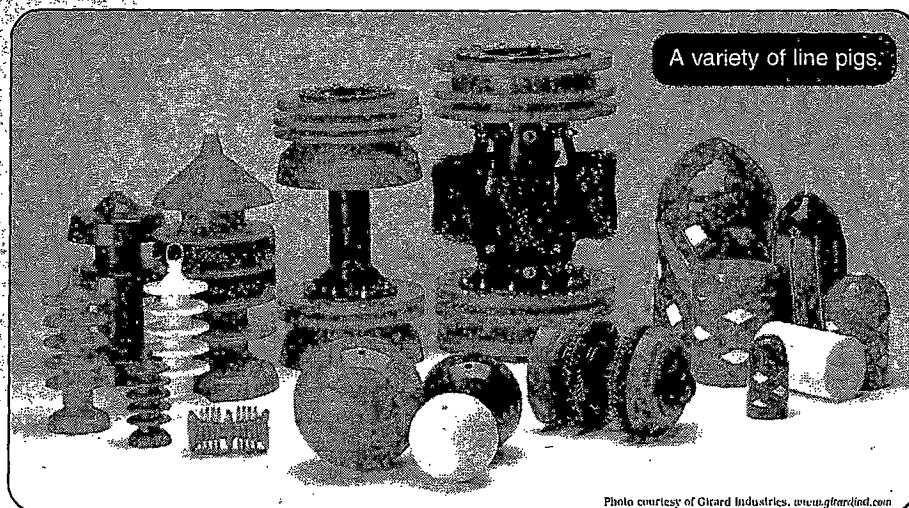
### What is a pig?

A pig is the object, usually bullet shaped, that is pushed by the water in the pipe in the direction of normal flow. The pig can be made of different materials (foam, steel, plastic, polyurethane), but generally is food-grade silicon, which is tough yet flexible and safe to be in contact with drinking water.

Pigs range in size from 2- to 48-inches in diameter and can be made to order in varying lengths, styles, and configurations for specific applications. Not only are pigs used for cleaning but also for inspecting the inside of pipelines and determining interior dimensions.

### Is pigging waterlines really necessary?

States and municipalities typically do not require regular pigging or swabbing of distribution lines in water systems. Some may only require pigging after initial construction of a new line to remove any debris left in the line because flushing alone will not always clean the dirt and debris out of the line.



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A photo of a 4 x 4 that was pushed out of an 8" water line. It took several pigs to finally get it out, and it came out in pieces, but they finally pigged it out.

Photo courtesy of Grand Industries, [www.grandind.com](http://www.grandind.com)

One reason to pig a waterline is that all distribution lines tend to have a biofilm coating the inside of the pipe. The bacteria are dormant until certain conditions activate the bacteria, causing problems. Regular flushing will not eliminate this biofilm. Regular pigging with flushing will reduce or eliminate biofilms.

A second reason to pig a line is inadequate water flow. More flow (volume) of water may be needed to support development or a growing population in the water system or to provide adequate water for fire fighting. In areas of water systems where increased development has caused water demand to surpass the flow output of an existing line, the system will usually need to replace the existing waterline with a line that can support the demand needed. If the existing flow is restricted due to excessive deposits, however, pigging may be the solution to the problem.

Third, most states require a minimum of a 6-inch diameter waterline when connecting a fire hydrant to provide adequate flow. After years of service, the inside of the pipe can become

restricted with deposits making the fire hydrant less effective if not useless for its intended job. If fire flow is needed, the solution in the past has been to replace the whole waterline, which is very costly and time consuming. Pigging may restore adequate flow for fighting fires at a fraction of the time and cost.

Finally, pigging waterlines may lessen complaints from water customers regarding the very same deposits that have or can restrict fire flow. These deposits are unwanted foreign matter such as iron oxide (red water), alum, calcium carbonates, barium sulfide and sediment. Pigging, in most cases, provides a solution. Cleaning these deposits can also reduce pumping pressures in areas of water systems that have booster pump stations. Increased pumping pressures can result in line leaks and pipe failures.

### Procedure

The procedure starts by determining if the waterline can be pigged. Not every water line is a candidate for line pigging. Is the water line so corroded that pigging can cause failure?

Does the waterline have reducers (i.e., the line getting smaller) that can cause the pig to get stuck? Does the line have increased pipe diameter sizes where the water pressure would be insufficient to move the pig?

One of the main things to look at is the condition of the interior of the pipe. If the pH of the water is low, the interior of the line could be so corroded that pigging could result in failure. If in doubt about the condition of the line, refer to past line repairs or talk to operators who have worked on any repairs of the particular line.

Much of this information can be obtained from as-built drawings or operators who have fixed leaks or installed the original water line. The line will have to be dug up to launch the pig. At that time, a visual inspection should be done to determine if pigging is possible. Another option is to use a low density foam pig in any unknown line and examine the foam pig for wear patterns, tears, or gouges. This may even help determine if the line can be successfully cleaned with a pig.

Before the pigging begins, it's useful to have information about the line:

1. Locate and mark all valves and meters.
2. Approximate all elbows and fittings in the line (again, refer to the as-built drawing if available).
3. Know the pressure and flows in the lines. This will also help determine if any flow increase and possibly pressure decrease was achieved by the pigging.

The more you know before you start, the fewer surprises you'll encounter once you start pigging.

Once the line has been inspected and appears suitable, the actual pigging begins. A pig is inserted into the line to be cleaned by means of a launcher. This is simply an oversized barrel with a reducer mating to the existing line. This allows for easy insertion of the pig, because the pig's outer diameter is larger than the pipe's internal diameter to maintain a good seal. Once in the launcher, clean water is introduced to send the pig on its way. This is usually the same water that is in the line from a nearby flushing hydrant or fire hydrant, or a tanker truck. The pig's path is determined by direction of flow and by isolating the line to be cleaned by closing valves to laterals, if present.

If the waterline is in service, you must notify your customers about the water interruption and possible dirty water after bringing the line back in service. If the water line has a lot of unwanted deposits, it may be wise to pull all water meters just before the pigging process starts and flush at the connection at the end of the process before you replace the meters.

Foreign matter could stop-up the meter or cause the meter to malfunction. The debris could also get into the customers' plumbing and cause problems such as plugging the aerators on the faucets, dishwashers, or washing machines.

If the waterline to be pigged has severe scaling (tuberculation) due to iron oxide (red water), alum, calcium carbonates, barium sulfide, or sediment, a progressive or stepped approach must be taken to avoid getting a pig stuck or losing a pig. This approach is simply using a smaller diameter pig at first and working your way up incrementally to the inside diameter of the pipe. The stepped technique will minimize the risk of the pig getting stuck or large amounts of debris plugging the line by cleaning a little bit at a time.



Articles about locating distribution lines and valve exercising programs are available on the National Environmental Services Center Web site at [www.nesc.wvu.edu/ndwc](http://www.nesc.wvu.edu/ndwc).

### Smart Pigs

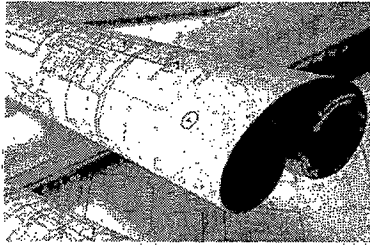
There are many different types and sizes of pigs. For waterline use, some nonstandard pigs include:

- Gauging pigs are mainly used after constructing the pipeline or before pigging an old line to determine if there are any obstructions in the pipeline.
- Profile pigs are gauging pigs with multiple gauging plates used to help map the inside condition of the pipe walls.
- Magnetic cleaning pigs are used to pick up ferrous debris left in the pipeline.
- Transmitter pigs or detector pigs are used to map out the location of pipeline or help locate a stuck pig.
- Spheres are round for ease in negotiating short radius 90-degree elbows, irregular turns, bends, and sweeps.

### Dealing with a Stuck or Lost Pig

If a pipeline has not been pigged on a routine basis or has never been pigged, a pig can get stuck. If a pig becomes stuck, the first priority





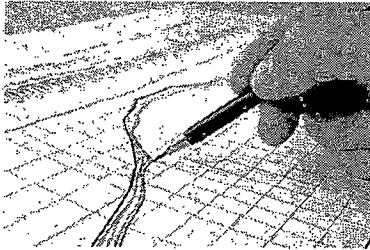
## TECHNICAL SPECIFICATIONS FOR THE INTERNAL CLEANING OF POTABLE WATER AND SEWAGE PIPE LINES

### EXECUTION:

- Pipeline shall be cleaned to remove most dirt, sludge, tuberculation and other foreign matter buildup from the interior wall of the pipeline. Equipment selected shall be capable of performing such cleaning. Satisfactory precautions shall be taken to prevent scratching or scraping of interior wall surfaces or other damage to pipes that might be inflicted by the improper use of cleaning equipment.

### PIGGING:

- Prior to the use of plastic foam type pigs, a swab made of soft plastic foam shall be sent through the piping to insure that the piping systems fittings, valves and interior dimensions will allow the initial cleaning pig to pass through it without being trapped within the system. Upon examination of this initial swab, subsequent pigs of varying diameters and/or densities shall be sent through the piping system until desired results are readied.

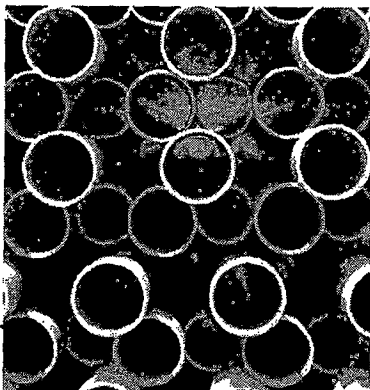


### PIGS:

- Pigs shall be manufactured of an open cell polyurethane foam body. Densities may range between 1 1/2# per cubic foot up to 8# per cubic foot density. Some pigs may be wrapped with polyurethane spiral bands, as well as abrasives for longer life or removal of harder scale. Pigs should be able to pass through reduction of up to 60% to 65% of cross sectional area of nominal pipe. Pigs shall be able to traverse standard piping configurations such as 90° elbows, tees, crosses, wyes, gate valves, and ball valves.

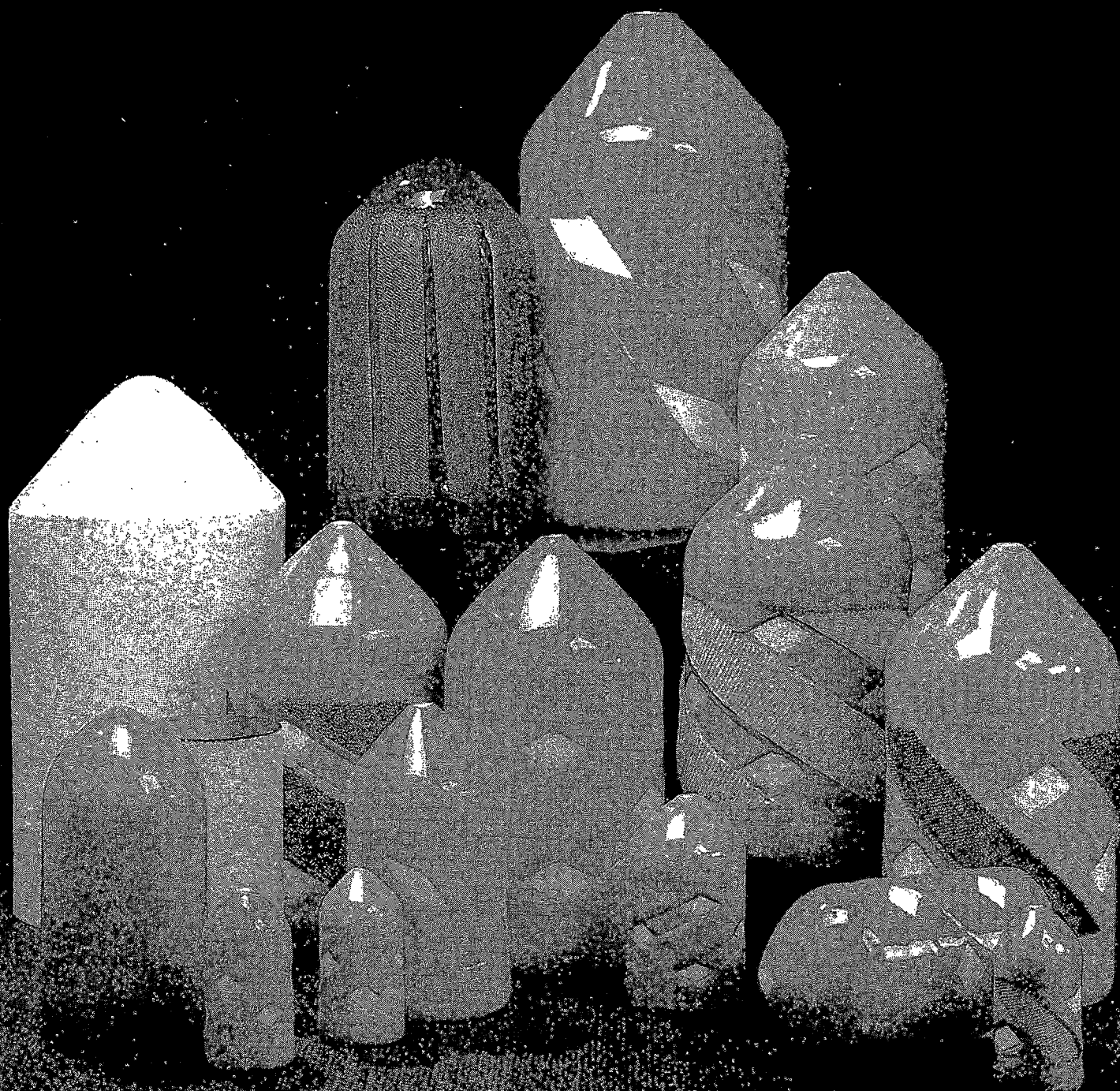
### CONTRACTOR REQUIREMENTS:

- Contractor shall submit evidence of qualifications to include a list of ten (10) projects of equal or greater scope. Project list shall state the following: dates, feet of pipe, project cost, location, contact person, telephone number. Qualification submittal shall include three (3) letters on client letterhead from stated contact person from the above list of ten (10) projects. All projects must have been completed within the last three years. All contractors must submit valid certification of training issued by an established pig manufacturer:



# Pipeline Pigging Products

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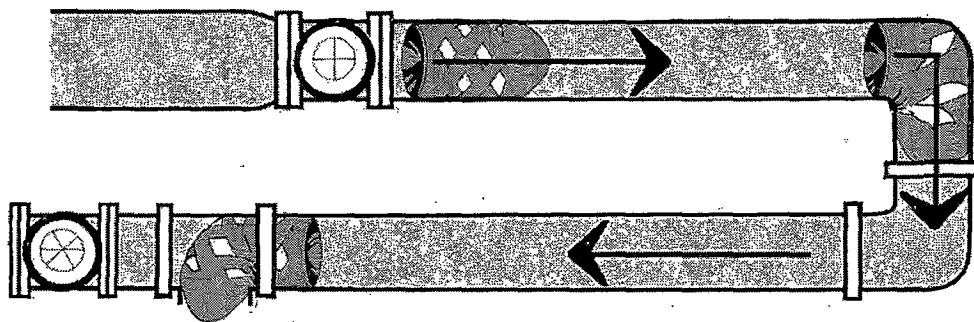
Constructed of flexible open cell polyurethane foam and various external wrappings, Poly Pigs have the ability to negotiate short radius bends, ells, tees, multi-dimensional piping and reduced port valves. The slightly oversized Poly Pig forms a "sliding seal" in the pipe, and is designed to remove product buildup, foreign matter and loose sediment.






A few of the benefits that Poly Pigs can offer are:

- Increased pipeline carrying capacity
- Improved product quality
- Power savings by reducing pump pressure
- Confirmation of pipe and flow integrity















Pipeline Pigging Products offers Poly Pigs in a wide variety of styles (drying, wiping and scraping) to accommodate almost any application, such as oil & gas transmission, municipal, petro chemical, pulp and paper and process piping systems.

With over 60 years of combined experience in manufacturing, research and application, our knowledge of Poly Pigs is unsurpassed in the industry.









APPEARANCE	STYLE	MUNICIPAL SERIES		APPLICATIONS
		TYPE	DENSITY	
	<b>B1</b>	Swab	$\frac{1-2 \text{ lbs. cubic foot}}{(16 - 32 \text{ Kg/M}^3)}$	Proving; Sweeping; Sealing
	<b>B2*</b>	Coated Swab	$\frac{1-2 \text{ lbs. cubic foot}}{(16 - 32 \text{ Kg/M}^3)}$	Light Wiping
	<b>B3</b>	Bare	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Light Cleaning
	<b>B4*</b>	Coated	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Cleaning
	<b>B5*</b>	Wire	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Scraping

\*Available with Rotating Pattern (see back page)

INDUSTRIAL SERIES				
APPEARANCE	STYLE	TYPE	DENSITY	APPLICATIONS
	C3	Bare	$\frac{8-10 \text{ lbs. cubic foot}}{(128 - 160 \text{ Kg/M}^3)}$	Heavy Duty Drying
	C4*	Coated	$\frac{8-10 \text{ lbs. cubic foot}}{(128 - 160 \text{ Kg/M}^3)}$	Heavy Duty Wiping
	C5*	Wire	$\frac{8-10 \text{ lbs. cubic foot}}{(128 - 160 \text{ Kg/M}^3)}$	Heavy Duty Scraping
	C6*	Carbide (Strap)	$\frac{8-10 \text{ lbs. cubic foot}}{(128 - 160 \text{ Kg/M}^3)}$	Heavy Duty Scraping
	RX3	Bare	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Regular Duty Drying
	RX4*	Coated	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Regular Duty Wiping
	RX5*	Wire	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Regular Duty Scraping
	RX6*	Carbide (Grain)	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Regular Duty Scraping
	G1	Swab	$\frac{1-2 \text{ lbs. cubic foot}}{(16 - 32 \text{ Kg/M}^3)}$	Light Duty Drying
	G2*	Coated Swab	$\frac{1-2 \text{ lbs. cubic foot}}{(16 - 32 \text{ Kg/M}^3)}$	Light Duty Wiping
	G6*	Carbide (Grain)	$\frac{1-2 \text{ lbs. cubic foot}}{(16 - 32 \text{ Kg/M}^3)}$	Light Duty Scraping
SPECIAL APPLICATION SERIES				
	PB	Power Brush <sup>TM</sup>	$\frac{8-10 \text{ lbs. cubic foot}}{(128 - 160 \text{ Kg/M}^3)}$	Maximum Scraping
	CPB	Plastic Brush	$\frac{8-10 \text{ lbs. cubic foot}}{(128 - 160 \text{ Kg/M}^3)}$	Light Wiping
	RXSS	Single Spiral	$\frac{5-7 \text{ lbs. cubic foot}}{(80 - 112 \text{ Kg/M}^3)}$	Economical Wiping

\*Available with Rotating Pattern (see back page)

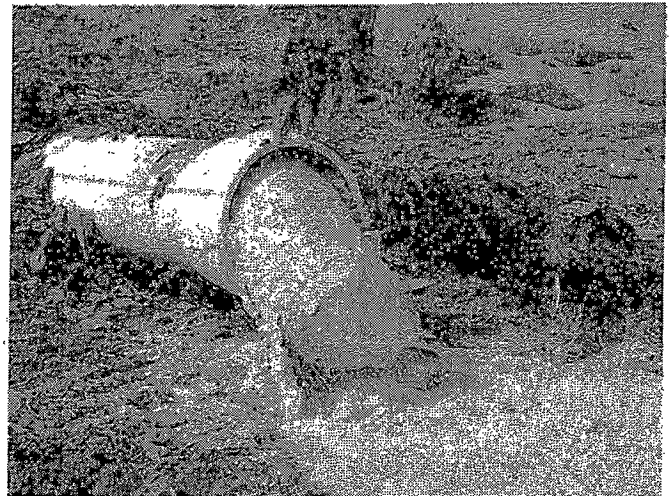


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	Double Nose	— Bi-directional runs with pipe reductions Available on all styles
	Cavity	— For housing electronic tracking transmitter Available on all styles
	Stud Pig	— Extra hard scale removal



1. Poly Pig exits potable water piping system after traveling 1,300'.

2. A 12" Poly Pig exits piping system after traveling several miles.



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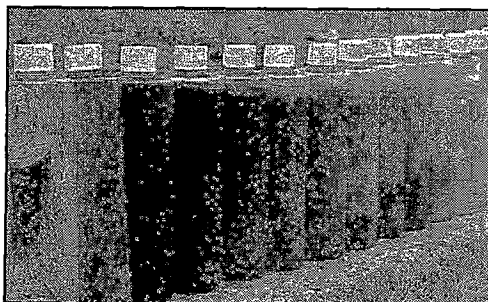
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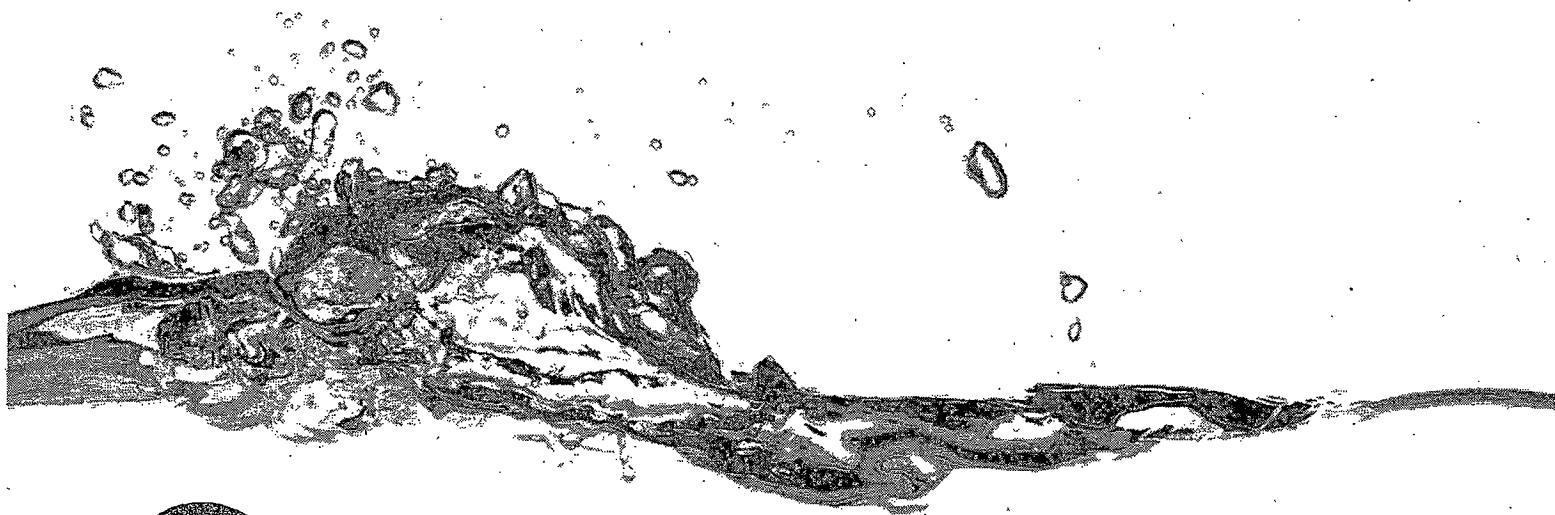


## USG ADVANCED PIPE CLEANING (ICE PIGGING)



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- Combines operational advantages of flushing with cleaning impact of soft pigging
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- System pressure pumps slurry through complex pipe networks
- Pig behaves like a liquid, flows through changes in diameter, through bends and butterfly valves without blockage
- Efficient, rapid and environmentally friendly way to clean water pipes
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# Flushing and pigging: basic waterline maintenance

**T**he daily operation of a public water system involves different aspects of many separate business and technical disciplines. In the course of a normal workday, operators will take a minimum of one to as many as 10 or 12 water samples. They may look for a water leak somewhere in the distribution system and will talk to three, four or more system customers about a variety of subjects. Operators may change out or add a customer water meter, repair a water leak, discuss purchases with sales reps and recheck meter readings on customer meters because "they just couldn't have used that much water." They might also have discussions with the project

engineer about an upcoming project, and still make time to do some maintenance to the distribution system and equipment.

Speaking of maintenance, there are many different types of equipment maintenance.

They go by the more mundane maintenance monikers of "Before Operations Maintenance Checks," or "During Operations Maintenance Checks" and the not to be left out, "After Operations Maintenance Checks." There is also the entirely separate category of "Preventive Maintenance Checks."

"Maintenance Shmaintenance," it all means the same thing!

Maintenance has to be performed on trucks, cars, meters, pumps, hand tools, power tools. It must also be performed on computers, buildings, wells, towers, clear wells, clarifiers and just about every component in

pipelines are buried in the cool, dark, damp underground. It is the wish and hope of everyone involved that they stay there, causing no problems – in total silence.

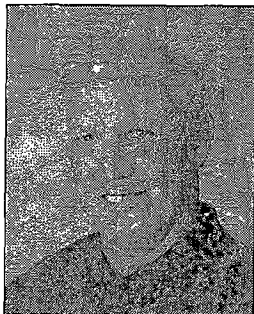
Unwanted buildup on the inside of most water distribution systems has been going on since the day the first valve was turned, and water started to flow through the system.

the entire system that has zero or more moving parts. Operators need to take care of system equipment if it is to provide long and reliable service.

In this article, the focus is on the part of the system that is nearly invisible and out of sight. It is the distribution system. These

Unwanted buildup on the inside of most water distribution systems has been going on since the day the first valve was turned, and water started to flow through the system. How does a system avoid this buildup or deal with it?

There are many things that can be done to correct this problem.



Gary Armentrout  
Technical Assistant



A Fort Scott, Kan. city crew inserts a soft pig into a 4-inch ductile iron line.

WATER QUALITY SERVICES

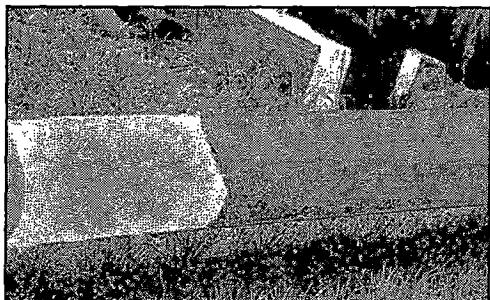
# USG ADVANCED PIPE CLEANING (ICE PIGGING)

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## ICE PIGGING

### ICE PIGGING FOR WATER & WASTEWATER MAIN CLEANING

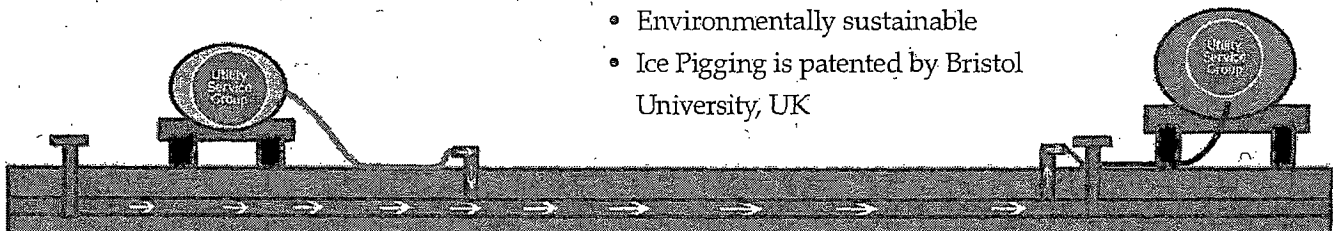


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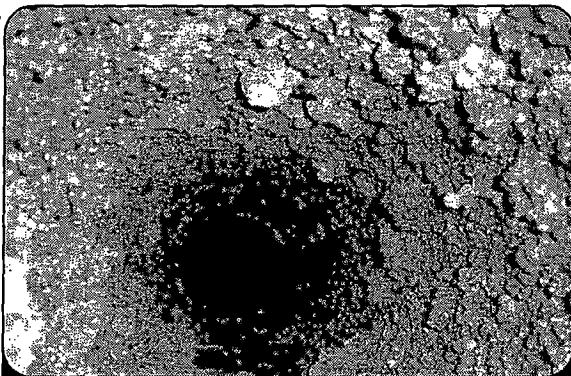
ICE PIGGING combines the operational advantages of flushing with the cleaning impact of soft pigging. The Ice Pig is a semi-solid that is pumped like a liquid and flows through changes in diameter, bends and fittings without blockage. Ice Pigging has a minimum impact on operations. The ice pig is simply pumped into and recovered from a hydrant at each end of the pipe section without excavation or modification to the hydrant.

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- No requirement to disinfect post cleaning
- Less disruptive/expensive than solid/foam pigging
- Uses 50% less water than conventional flushing
- Environmentally sustainable
- Ice Pigging is patented by Bristol University, UK







A pipeline prior to line pigging.

Photo courtesy of Girard Industries, [www.girardind.com](http://www.girardind.com)

is to find and retrieve it, but you must identify the cause. Usually one of two conditions exists when a pig is stuck: fluid bypassing around the pig (not pushing the pig) or a blockage of the flow.

In water distribution systems that have loops and multiple tee connections a pig can find its way out of the work area and get lost. It is important to locate all valves and close off the lines that are not being pigged and know the direction of water flow.

If you lose a pig, a smart pig such as a detector pig or transmitter pig can be launched to help find the lost pig. A transmitter can also be installed in the cleaning pig so that a second pig does not have to be launched to help locate it if it should get lost or stuck. Sometimes a pig gets stuck because of a broken or shut gate valve.

Procedures for dealing with a stuck pig or fluid going around the pig:

1. Increase the line pressure and flow rate, but do not exceed the safe limits of the pipeline allowing for age and/or condition of the line. The flow rate and pressure can be increased with a pumper and tanker fire truck.
2. Release pressure from the line and drain the line back toward the launcher. Releasing pressure allows the pig to relax to its normal shape and may even cause the pig to back up in the line. After pressure has dissipated completely for several minutes, re-pressurize the line in an attempted to drive the pig through the restriction. This may be repeated two or three times.
3. For a bypass situation, run a soft swab in behind the stuck pig to try and create

a positive seal, stopping the bypass. Repeat step one above.

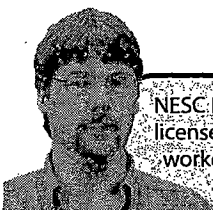
4. Back the pig up by applying pressure from the opposite end of the waterline using a pump or possibly a pumper fire truck.
5. If a foam pig is used and gets stuck a super-chlorinate mixture (3,000 to 5,000 ppm) in a slug form can be used to dissolve the pig. The line must be flushed and tested to be sure the chlorine residual is allowable limits after the super chlorination.

Water systems are advised not to undertake line pigging on their own. Shop around and find a reputable company with experience in line pigging with water lines. Start with an area of the water system that the line location, size, type, and condition are all known and the lines can be dug up easily if needed.

## References:

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Special thanks to Jim Burris at Girard Industries for his assistance.

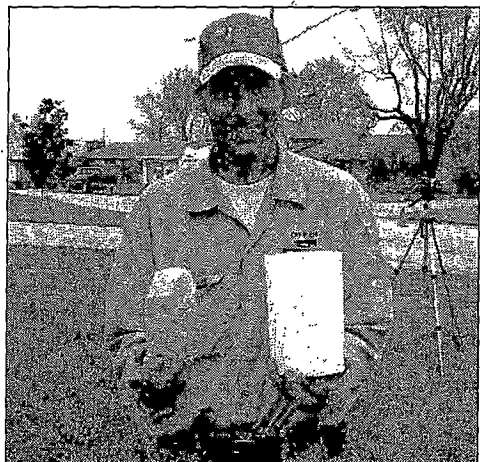


NESC Engineering Scientist **Zane Satterfield** is a licensed professional engineer and previously worked for the West Virginia Bureau of Public Health, Environmental Engineering Division.

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You also may call NESC at (800) 624-8301.





*Left: The before and after look of a soft pig in the hands of Fort Scott Water Distribution Supervisor Bill Lemke.*

*Above: Pigs in a row, 10 of 12 pigs used in a water line maintenance operation. The missing two pigs came out in pieces less than a quarter dollar in size.*

Some actions include changing the pH of the water, adding certain types of chemicals, and cleaning the inside of the pipe.

#### **Flushing, as a prevention**

The purpose of flushing of a water system is to remove any accumulated sediments or other impurities that have been deposited in the pipe. Flushing can also improve the flow of water, in effect, restoring the pipeline to its original capacity. Flushing is performed by

isolating sections of the distribution system and then opening flush or fire hydrants to allow a large volume of water to move through the isolated pipeline and scour out any sediment.

#### **Pigging, as a remedy**

Water mains may also be mechanically cleaned with the use of swabs or pigs, as well as a variety of other means. KRWA has published numerous articles on

the topic of pigging, describing the benefits of the projects from improved water quality to greater energy efficiency,

Pigs are devices that are forced through a section of line to scrape the accumulated

deposits off the inside of the pipe. Pigging is now routinely conducted at the time of installing new waterlines. While some might contend that a requirement to pig a pipeline adds to the cost, I respectfully suggest that if project circumstance were to prohibit a contractor from pigging, the cost should increase. It's been proven that pigging newly installed pipelines reduces water loss due

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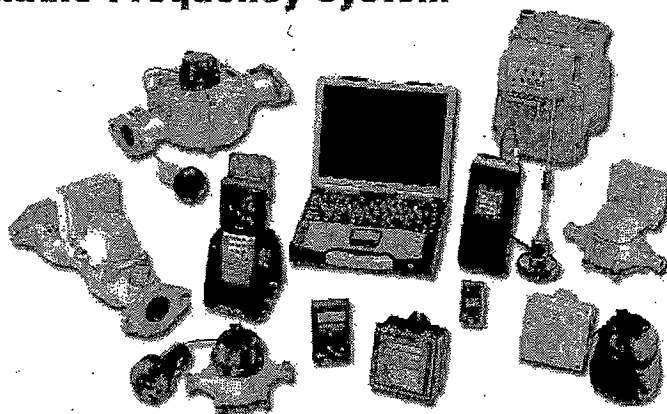
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*The concentration of buildup is evident coming from the inside of a ductile iron main. After years of operation and depending on water quality, excessive mineral deposits often build up inside waterlines. Pigging can often remove the deposits, improving water quality and flow characteristics.*

When there is a buildup inside water lines that cannot be removed by simple flushing, pigging is a cost efficient, effective and environmentally friendly alternate. Most important, it is an economical alternate to

to flushing by 75%, to say nothing for the reduction of labor to complete the process of getting a new extension or pipeline into service.

line replacement. No matter what type of pipe is in the distribution system, there is a pig to do the job as needed. There are four basic types of pigs used today. Each pig

is designed for a specific job.

They are the polyurethane foam pigs, mandrel or mechanical pigs, solid cast urethane pigs and the high tech "smart pigs." If a system's water lines are cast iron or ductile iron, there is a very good chance of needing to pig at least some sections. The deposits in the pipelines can cause enough restriction that flow will be reduced. PVC lines normally are not subjected to the same degree of buildup as cast iron or ductile iron pipelines. PVC however will often have sediment at the bottom of the pipeline along with a thin coating covering the entire inside. A foam pig can normally remove this type of buildup. This type of pig can also be reused after traversing segments of PVC pipe. If, on the other hand the pig is used in a cast or ductile iron pipe, it is usually torn to shreds as it moves through the line. It is KRWA's experience that pigging small diameter iron pipelines may not be practical if there is a high degree of buildup. It may be impossible to remove hardened deposits from small diameter lines of one to four inches. KRWA techs have experienced pigging projects where a city system had some 4-inch pipeline with so much buildup that no daylight could be seen through even a 20-foot section.

Pipe maintenance is a very important part of the overall maintenance program of any water system. I suggest that systems practice flushing as a preventive measure and pigging as a remedy. If assistance is needed in setting up a maintenance program for a city or RWD, or there is a need to discuss flushing or pigging, contact KRWA at 785/336-3760 or e-mail KRWA at [krwa@krwa.net](mailto:krwa@krwa.net).



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GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

### **Backgrounder on City of Flint Water**

After a change in the water source for Flint residents, there have been concerns related to the water quality, in particular lead in the water, and its impact on the community. As a result, Department of Health and Human Services (DHHS) and the Department of Environmental Quality (DEQ), working with local public health departments and the City of Flint (City), have put together an Action Plan to address public health concerns in the City.

While Flint water is meeting all state and federal drinking water standards, there is an increasing level of concern that the Flint River is not the best water source. The City's Technical Advisory Committee recommended the City switch back to DWSD. In addition, recent studies by Hurley Children's Hospital, and confirmed by DHHS, have indicated a rise in blood lead levels in some Flint children. Sample screening completed last week by the DEQ indicated that some Flint Public Schools have detectable lead levels in their water.

#### **Action Plan:**

Immediately, the City and State announced the following steps:

- Governor named Dr. Eden Wells as Flint Public Health Advisor
- Advisories issued recommending residents flush their cold water pipes before use, as well as only use water from the cold water tap for drinking, cooking and especially making baby formula.
- Schools are advised to not use the drinking water fountains and are using bottled water.
- Free filters are available to all households in Flint, along with replacement filters.
- Flint Public Schools were screened for lead exposure.

For the near term, the City and State are asking for/ doing the following:

- Switch the drinking water source from the Flint River to DWSD.
- Test and inspect all schools in Flint, including charter and parochial schools.
- Free water testing for all homes.
- Expand exposure testing to additional households in Flint.

For the long term health of all Flint residents, the City and State have committed to:

- Switching to the Karegnondi Water Authority in the summer of 2016 as the permanent water supply for the City of Flint
- Allow for Drinking Water Revolving Loan funds to be used to expedite the replacement of private residential lead service lines.
- Lead exposure campaigns for homes, schools and communities.

**Budget Request:**

To facilitate the action plan outlined above, the State is requesting \$10.6 million (\$8.2 million GF). The funding will address 4 priority areas:

1. Provision of filters for residential service (\$2,016,000)

Filters will be provided to all Flint households, including replacement filters until the system is fully optimized. Each filter cost is \$20.

2. 50% of the estimated cost to reconnect temporarily to the DWSD (\$6,000,000)

The City has estimated it will cost an additional \$1.3 million per month to use DWSD instead of the Flint River. The State and City have agreed to split the cost through July 2016 when the new Karegnondi Water Authority will be completed and Flint will switch to that water source.

3. Funding for testing water samples (\$1,000,000)

New testing protocols for schools will require each faucet in the school be tested and evaluated at the State's lab. In addition, lead exposure testing in homes will result in thousands of additional samples that will need to be evaluated. Each sample cost \$26 to process.

4. Lead exposure testing and inspections (\$1,600,000)

DHHS, DEQ and LARA are pulling together a team to go into schools and high risk homes to test and evaluate lead exposure.

## Olszewski, Rosemarie (DEQ)

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 10:38 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Flint Leak Detection  
**Attachments:** hppscan185.pdf

**From:** Andy Dillon [<mailto:adillon@conwaymackenzie.com>]  
**Sent:** Tuesday, March 03, 2015 4:38 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ)  
**Subject:** Fwd: Flint Leak Detection

Dan,

I hope this finds you well.

Email below is an FYI. You may recall Tucker Young assisted me in evaluating the KWA oppty. They asked me to advise you they are familiar (obviously) w/ Flint and would like to help w/ leak detection/correction.

Actually, I have another matter I am working on I think you will find very interesting. I am off this week but will follow up when I return to Michigan as its a cutting edge, technology play that I believe the DEQ will find of interest. I introduced it to Tony Earley and he expressed great interest. Will advise in greater detail when I return from vacation (ugh, yes working while on vacation).

Best,

### Andy Dillon

Conway MacKenzie Inc.  
401 S. Old Woodward Avenue, Suite 340, Birmingham, MI 48009  
248.952.8868 (office) PPI (cell) | 248.433.3143 (fax)  
[adillon@conwaymackenzie.com](mailto:adillon@conwaymackenzie.com)

----- Forwarded message -----

**From:** George Karmo <[GKarmo@tyjt.com](mailto:GKarmo@tyjt.com)>  
**Date:** Fri, Feb 27, 2015 at 1:28 PM  
**Subject:** Flint Leak Detedtion  
**To:** "[adillon@conwaymackenzie.com](mailto:adillon@conwaymackenzie.com)" <[adillon@conwaymackenzie.com](mailto:adillon@conwaymackenzie.com)>  
**Cc:** David Guastella <[DGuastel@tyjt.com](mailto:DGuastel@tyjt.com)>

Andy,

It was good talking to you this morning.

I'm referencing the Crain article attached related to City of Flint Water issues.

As you are aware when TYJT completed its report for the State of Michigan Treasury ( assessment of Flint continuing with DWSD or partnering with Karegnondi Water Authority), we had recommended that Flint implement a program for leak detection of its water system. It was believed that the system experienced up to 50% leakage! We had indicated that the effort was necessary so that Flint could dramatically reduce the amount of water it needed to purchase from the Karegnondi Water Authority prior to designing and constructing the new pipe line.

As you are aware, TYJT is knowledgeable of the Flint area water system and well experienced in conducting leak detections and water audits. We therefore ask, based on the fact that the State of Michigan maybe granting Flint some funds to do the leak detection (see attached article) that TYJT use its existing DTMB as-needed contract with the State to accomplish this task.

Please let me know if you need additional information. We will be available to immediately meet with representatives of the State and City of Flint to discuss this leak detection program.

Regards,

George Karmo, P.E., BCEE

President

Tucker, Young, Jackson, Tull Inc.

615 Griswold Street

Detroit, Michigan 48226

313-234-0337 office direct

**PPI** cell

[gkarmo@tyjt.com](mailto:gkarmo@tyjt.com)



## MICHIGAN BRIEFS

### Survey: More small firms leave it to workers to buy health coverage

Only 20 percent of small-business owners who offer employee health coverage indicated they intend to continue those benefits into 2016, according to a Grand Valley State University survey that asked how they were reacting to the Affordable Care Act. That move stems in part from the option available for individuals to buy coverage through public health exchanges created under Obamacare, *MI Biz* reported.

The results confirm much of what insurance carriers have seen and heard from small employers said Scott Norman, vice president of sales and client services at Priority Health, which sponsored the GVSU survey. The results also point to the expected rise of the individual market.

### How can you save a mall? Some developers turn to 'de-malling'

Despite numerous headlines touting the death of the American shopping mall, West Michigan developers have avoided an untimely demise. One key has been a push to effectively "de-mall" the sprawling shopping complexes where stores are connected via interior corridors. Instead, they're rearranging the traditional shopping malls so that the stores are only accessible from outside entrances.

## State turns on money spigot to end Flint water torture

The problems for the Flint water system just keep going drip, drip, drip. Last week, the Genesee Intermediate School District said it had stopped using city water and was giving bottled water to about 1,300 preschoolers.

Also last week, Gov. Rick Snyder and the state stepped in, pledging \$2 million in grants. The money will pay for a contractor to perform a leak detection survey of city water lines and shut down the Water Pollution Control Facility incinerator, replacing it with facilities allowing for waste disposal in landfills. The Associated Press reported.

Flint's emergency manager, Jerry Ambrose, said the financial relief also will free money to accelerate the replacement of major pipelines, which he said will increase water circulation and improve quality.

In January, Flint's system was in violation of the Safe Drinking Water Act because of high levels of a

disinfectant byproduct. Flint, formerly a major customer of the Detroit Water and Sewerage Department, severed those ties last year to build a pipe into Lake Huron, ostensibly to save money.

Until the pipe is ready in 18 months, Flint gets water from the Flint River, which residents say has the smell, taste and appearance of something that looks less like water and more like, well, water.

Last year, a General Motors Co. engine plant stopped using water from the Flint River after the automaker said it caused rusting on its engine parts.

The decision is expected to cost the city about \$400,000 per year in lost revenue.

"The water today is within all acceptable guidelines — and that's an improvement over where it was a couple months ago," Ambrose said. "That says the water is safe. It doesn't say the quality is acceptable, and that's not acceptable to us."

The de-malling strategy effectively breathed new life into Grand Rapids' Centerpointe Mall, now about 98 percent occupied, according to Coilers International. The de-malling of Centerpointe has inspired developers to do a similar project at another mall that has fallen on hard times in recent years: Holland's Westshore Mall on U.S. 31.

will not cut back on its expansion plans or workforce despite an 8 percent decline in sales last year. Amway attributed the decline to a strong U.S. dollar and lower sales in China, the Ada-based company's largest market.

The latest quarterly survey of office furniture executives by Michael A. Dunlap & Associates found the industry "very steady" heading in the new year. "We are confident that the industry is still on course to achieve its best year in more than a decade," said Michael Dunlap, head of the Holland consultancy.

The U.S. Army Corps of Engineers will spend an additional \$12 million this year on improvements to the Great Lakes navigational system. The Associated Press reported. The additional money allocated to the Detroit district will pay for eight projects involving dredging of ship

ping channels or other repairs, replacement or construction.

A subsidiary of Grand Rapids-based Universal Forest Products Inc. acquired assets of Rapid Wood Mfg. LLC of Caldwell, Idaho, *MI Biz* reported. In January, Universal acquired a majority stake in Australia's Integra Packaging Proprietary Ltd.

Carson Health in Montcalm County was acquired by Sparrow Health of Lansing, Sparrow said in a statement. Carson, with 61 beds, had been an affiliate of the Sparrow system since 1997.

The *Daily News* in New York City reports that Dow Chemical Co. Chairman and CEO Andrew Liveris bought a condominium in Manhattan's Chelsea neighborhood for \$10.75 million. The 2,500-square-foot abode on the 17th floor has three bedrooms, "sweeping views of Midtown ... and 12-foot ceilings." It is said that his neighbors include actress Cameron Diaz.

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### MICHIGAN BELLANEOUS

Amway Corp. President Doug DeVos told *The Grand Rapids Press* that the direct-sales giant

### CORRECTION

The cost of Oakland University's Executive MBA, health care leadership emphasis, is \$42,500. An incorrect price was published in a list of selected area leadership programs in the Feb. 2 edition.



**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, March 17, 2015 4:51 PM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Cc:** Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: City of Flint Information - Consultants  
  
**Importance:** High

Liane/Stephen, Please see below.  
Do you know? Thanks.

---

**From:** Hollins, Harvey (GOV)  
**Sent:** Tuesday, March 17, 2015 4:47 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Clayton, Stacie (GOV); Sygo, Jim (DEQ)  
**Subject:** Re: City of Flint Information - Consultants

Thank you. Has anyone from DEQ talked with them? Do they know I will be calling?

Best,  
Harvey

On Mar 17, 2015, at 9:54 AM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

Good Morning Harvey,

The consultants listed below are working with Flint and are in the best position to recommend a water filter system. The locals should be asked to use their consultants to recommend a technology.

Warren Green with Lockwood, Andrews & Newman, Inc.  
630-918-2494

and

Marvin Gnagy with Veolia North America  
419-450-2931

Thank you.

Dan Wyant  
Director

---

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

**Thelen, Mary Beth (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Wednesday, October 07, 2015 7:09 PM  
**To:** Scott, Allison (GOV); Muchmore, Dennis (GOV); Agen, Jarrod (GOV); Dickinson, Sarah (GOV); Emmitt, Beth (GOV)  
**Subject:** Flint Drinking Water Action Plan Update - FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGED  
**Attachments:** City of Flint Water Funding Solution.pdf; FLINT SCHOOL TESTING RESULTS.DOCX; Drinking Water Regulations for Monitoring of Lead in Schools and Child C....doc; Response to Corrosion Control Questions.docx; Fwd: TAC Meeting Highlights; CC Meeting Minutes 3-25-2013 (1).doc; Flint.pdf; KWA Contract (amended) 130165.2.pdf

Governor Snyder,

I wanted to provide you with the attached documents to address a number of the questions that you are asking today. A full briefing for the press conference, including press release, talking points, run of show, and frequently asked questions, will be provided by your team. Included in this e-mail are the following attachments:

1. Flint Drinking Water FY 2016 supplemental budget request summary
2. Summary of the Flint schools water testing results and our response to the results
3. Drinking water regulations for monitoring lead in schools and child care centers
4. Response to the questions on corrosion control
5. Summary of today's Safe Drinking Water Technical Advisory Committee meeting
6. Flint City Council Minutes from March 25, 2013; the Resolution to Purchase Capacity from Karegnondi Water Authority; and the Amended Contract

Other Updates

Mayor Duggan and Sue McCormick of DWSD were contacted, briefed, and are supporting tomorrow's announcement. Both have indicated they would provide positive comments supporting the decision.

Dan Wyant

**City of Flint Water - Funding Solution  
State of Michigan Commitment**

Agency	GF/GP	Gross	Comments
<b>Filters:</b>			
Health & Human Services	\$1,016,000	\$1,016,000	AY15 work project
Health & Human Services	\$0	\$1,000,000	DEQ State Restricted Settlement Funds provided to HHS Emergency Services local office (FY16 appropriation).
<b>Subtotal Filters:</b>	<b>\$1,016,000</b>	<b>\$2,016,000</b>	
<b>Reconnect to DSW:</b>			
Environmental Quality	\$5,000,000	\$6,000,000	Reconnection costs ~\$1.3m/month x 9 mos. to be shared by state & Flint DEQ State Restricted Settlement Fund of \$1m; balance GF/GP
<b>Subtotal Reconnect:</b>	<b>\$5,000,000</b>	<b>\$6,000,000</b>	
<b>Testing Costs:</b>			
Environmental Quality	\$1,000,000	\$1,000,000	Additional tests at state lab; cost per sample: \$26
<b>Subtotal Testing:</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	
<b>Additional Agency Support:</b>			
LARA	\$0	\$200,000	Support for plumbing inspectors to do schools (public and parochial) and health facilities (hospitals, Long Term Care, etc.).
MSHDA	\$0	\$249,900	
Health & Human Services	\$600,000	\$600,000	Follow-up on children with elevated blood levels
Environmental Quality	\$300,000	\$300,000	Home and school inspections
<b>Subtotal Additional Support:</b>	<b>\$900,000</b>	<b>\$1,349,900</b>	
<b>ALL TOTAL</b>	<b>\$7,916,000</b>	<b>\$10,365,900</b>	

## FLINT SCHOOL TESTING RESULTS:

### WHAT DID WE FIND?

- 1) The results of the initial screening conducted over the course of the last week are consistent with the last round of community lead and copper testing.
- 2) There were a total of 37 samples taken from 13 schools. Of those 37 samples, 4 exceeded the 15 ppb action level. There were 3 schools that had samples exceeding the action level: Eisenhower Elementary (which had two samples exceeding 15 ppb). Brownell STEM Academy and Freeman Elementary each had one sample exceeding 15 PPB. The sample from Freeman Academy was significantly higher than the other samples at 101 PPB.
- 3) Looking at the data from a health based perspective, the data clearly demonstrates that more detailed sampling needs to occur so that the various sources of lead contamination contained within each respective school's plumbing can be identified and addressed.

### WHAT DOES THE DATA MEAN?

- 1) The data underscores the need for a complete and thorough evaluation of the plumbing system within each school.
- 2) We have developed a protocol for evaluating the plumbing systems and we will be working with schools to implement these protocols and to assist them in determining a corrective action plan to address this issue.
- 3) The State is identifying staff within DEQ, DHHS, LARA and Local County Health Departments to assist schools in conducting evaluations of their plumbing systems.

### WHAT IS YOUR PROTOCOL?

- 1) DEQ's protocols are based on similar work done in Michigan and in other States.
- 2) Multiple samples from each tap used for cooking or drinking water will be collected at prescribed intervals to identify levels of lead and its likely source.
- 3) Once an evaluation is complete, we will be able to assist each School in developing a comprehensive plan to address issues on a site specific basis.

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#### HOW DO SCHOOLS RESPOND?

- 1) Schools should continue protective measures that are currently in place until a complete study can be conducted at each school. This includes the continued use of bottled water for consumption purposes.
- 2) We will be reaching out to schools to schedule a complete evaluation, assessment and sampling, of their plumbing systems.

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## *Drinking Water Regulations for Monitoring of Lead in Schools and Child Care Centers*

There is no federal or Michigan law requiring sampling of drinking water in schools that receive water from other public water systems, although schools that have their own water supply are subject to regulation and sampling as non-community public water systems. Schools served by a public water system may be included as a sampling site (i.e., tap) for a public water system's lead and copper monitoring program if there are insufficient single-family homes that qualify. There are no federal requirements for more extensive testing.

The 1986 Amendments to the Safe Drinking Water Act (SDWA) required EPA to develop regulations to control for lead in drinking water. The Lead and Copper Rule (LCR), issued in 1991, is focused on controlling corrosion within the distribution system that delivers water to customers. The 1986 SDWA Amendments also required that only lead-free materials be used in new plumbing and in plumbing repairs.

In 1988, the SDWA was further amended by the Lead Contamination Control Act (LCCA), to reduce the exposure of lead to children in schools and child care facilities. The LCCA prohibited the sale of any drinking water cooler that is not lead-free and required that:

- the EPA identify each brand and model of drinking water cooler, indicating which are lead free and which have a lead-lined tank and distribute the list to states (SDWA Sec. 1463),
- the Consumer Product Safety Commission order that manufacturers and importers of all drinking water coolers identified as having a lead-lined tank repair, replace, or recall and provide a refund for such coolers (SDWA Sec. 1462),
- the EPA publish a guidance document and testing protocol to assist states in determining the source and degree of lead contamination in school drinking water (SDWA Sec. 1464), and
- states establish programs to assist schools and child care facilities to test for and remedy lead contamination problems, with public availability of results of such testing (SDWA Sec. 1464(d)).

As a result of a 1996 court decision, States are not required to establish testing programs. In its decision, the Fifth Circuit held that provisions in section 1464(d) were unconstitutional under the Tenth Amendment to the U.S. Constitution because they directly compelled the state to enact and enforce a federal regulatory program and provided no options for the State to decline the program. The decision did not, however, restrict states from developing and carrying out their own programs to assist schools.

In 1989 and subsequent years, EPA released guidance and information to inform states and school systems how to test for and reduce the risk of lead exposure in school drinking water. EPA's guidance provides a protocol for testing water in schools and recommends that schools take action at fixtures where the lead concentration exceeds 20 ppb. This concentration differs from the 15 ppb action level that public water systems are required to follow. ***The 20 ppb action level is based on a smaller sample collection volume of 250 milliliters (ml) and is designed to pinpoint specific fountains and outlets that require attention.***

In 1990, Michigan did provide schools and licensed child care centers with information to assist in testing and remedying potential lead contamination of their drinking water as required by the Lead Contamination Control Act of 1988. This information included a sampling protocol and guidance on flushing their system to minimize lead exposure.

In 2004, EPA surveyed states to determine what additional programs may exist to control exposure to lead in drinking water at schools and child care centers. Forty-nine states, Puerto Rico, the District of Columbia and the Navajo Nation responded. Only 16 respondents indicated they have or will conduct special sampling or studies to target lead exposure at schools and child care centers. Michigan has not included any additional sampling programs or studies. However, some local agencies have conducted voluntary programs. For example, the W.K. Kellogg Foundation funded a program implemented by the Calhoun County Health Department that sampled schools in Battle Creek. In Michigan's response to this EPA survey, we included a recommendation for EPA to allow schools to be considered as a primary LCR monitoring site so that more information about lead levels in schools would become available. However, no changes in sampling criteria have occurred to date.

In 2005, a Memorandum of Understanding was signed between the EPA, the Department of Education, the Centers for Disease Control and Prevention (CDC), the American Water Works Association, the Association of Metropolitan Water Agencies, the Association of State Drinking Water Administrators, the National Association of Water Companies and the National Rural Water Association to facilitate actions that reduce children's exposure to lead from drinking water at schools and child care facilities.

Across the country and in Michigan, most schools and child care facilities receive water from other community water systems. However, those schools that have their own source of drinking water are considered non-transient non-community water systems and are subject to the LCR. In Michigan, there are 755 such schools and child care centers that must monitor for lead to demonstrate compliance.

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EPA's guidance provides a protocol for testing water in schools and recommends that schools take action at fixtures where the lead concentration exceeds 20 ppb. This concentration differs from the 15 ppb action level that public water systems are required to follow. The 20 ppb action level is based on a smaller sample collection volume of 250 milliliters (ml) and is designed to pinpoint specific fountains and outlets that require attention. When testing fixtures, the levels of lead are expected in the initial flush of water that has been sitting in the pipes. The 15 ppb action level required for compliance with the LCR calls for a tap sample volume of 1000 ml (1 liter), and is designed to identify system-wide problems. If a one liter sample was collected from a drinking water fountain in schools, the initial high concentrations might be diluted by the later part of the sample, which could show lower concentrations. The 20 ppb school level is not inconsistent and likely is more stringent because it reflects a more concentrated sample; 20 ppb in a 250 ml sample would correspond to about 12 ppb in a one liter sample.

### Response to Corrosion Control Questions

- Lime Softening can affect the pH in water
- The pH of the water is one physical characteristic that can affect the leaching of lead from pipes into the water
- As per the requirements in the Lead/Copper rule the Flint Water system was evaluated for two consecutive monitoring periods and the results of the monitoring demonstrated that further action was necessary.
- The DEQ promptly notified the Flint water system of the need for additional measures and the city of Flint promptly began putting together an action plan to address this need.

**Thelen, Mary Beth (DEQ)**

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**From:** Sygo, Jim (DEQ)  
**Sent:** Wednesday, October 07, 2015 6:00 PM  
**To:** Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Wyant, Dan (DEQ)  
**Subject:** Fwd: TAC Meeting Highlights

Summary of advisory committee meeting

Sent from my iPhone

Begin forwarded message:

**From:** "Prysby, Mike (DEQ)" <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)>  
**Date:** October 7, 2015 at 4:56:44 PM EDT  
**To:** "Sygo, Jim (DEQ)" <[SygoJ@michigan.gov](mailto:SygoJ@michigan.gov)>  
**Subject:** TAC Meeting Highlights

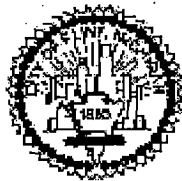
Below is a summary of the Flint TAC meeting to obtain the committee's endorsement to switch back to Detroit water.

1. The TAC endorses the switch back to the DWSD
2. Marc Edwards of VA Tech supports the switchover to DWSD with conclusion that Flint River water with corrosion control will still be 4 times more corrosive than water from DWSD after 5 weeks of treatment.
3. Genesee County states two weeks to prepare pipeline for re-use (flush, disinfect, sample, etc)
4. Supplemental corrosion control still needed with DWSD water and ACT 399 submittal can be made in approx one week.
5. No pros were brought to the table for staying on the Flint River.

Sent from my iPhone

# **City of Flint, Michigan**

*Third Floor, City Hall  
1101 S. Saginaw Street  
Flint, Michigan 48502  
[www.cityofflint.com](http://www.cityofflint.com)*



## **Meeting Minutes - Draft**

**Monday, March 25, 2013**

**5:33 PM**

**Agenda amended to include Board of Hospital Managers appointments**

**Council Chambers**

### **CITY COUNCIL**

*Scott Kincaid, President, Ward 9  
Bryant W. Nolden, Vice President, Ward 3*

*Claudia Croom, Ward 1*

*Joshua M. Freeman, Ward 4*

*Sheldon A. Neeley, Ward 6*

*Jacqueline Poplar, Ward 2*

*Bernard Lawler, Ward 5*

*Dale K. Weighill, Ward 7*

*Michael J. Sarginson, Ward 8*

*Inez M. Brown, City Clerk*



## CALL TO ORDER

*President Scott Kincaid called the meeting to order at 5:33 p.m.*

## ROLL CALL

*Councilperson Michael Sarginson arrived at 5:37 p.m.*

**Present:** Councilperson: Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, Kincaid, Councilperson Weighill and Councilperson Croom

## PLEDGE OF ALLEGIANCE

*Councilperson Sheldon Neeley led the Pledge of Allegiance.*

## SPECIAL ORDER

**130217** Special Order/Information & Discussion/Karegnondi Water Authority (KWA)

A Special Order as requested by Council President Scott Kincaid to continue discussion and review of information on the Karegnondi Water Authority (KWA).

**Presented**

## PETITIONS AND UNOFFICIAL COMMUNICATIONS

**130193** Change to Digital/All Limited Basic Service Channels/Comcast Cablevision

Communication dated March 6, 2013, from Gerald W. Smith, Government Affairs Manager, Comcast, to Flint City Clerk, re: On or shortly after April 9, 2013, Comcast will convert all Limited Basic service channels – including Public, Government and Educational Access (PEG) channels to digital format, and will provide customers with digital equipment.

**This matter was Placed on File. The motion carried.**

**130199** Certified Letter/Loyst Fletcher, Jr. & Associates

Communication received from Loyst Fletcher, Jr. to Chief Legal Officer, re: He questions the tax-exempt status of Word of Life Christian Church, which received a tax bill from the city.

**This matter was Placed on File. The motion carried.**

**130200** Local Approval Notice/Michigan Liquor Control Commission (MLCC)/Time Square/Ward 3

Local Approval Notice dated March 14, 2013, from MLCC to Flint City Clerk, re: The MLCC has received a request to transfer all stock in 2012 Class C license with Sunday Sales Permit (PM) and Dance Permit, located at 4522 N. Saginaw,

Flint, Michigan, 48505, Genesee County, held by the estate of Myra Seals, Inc., 1028 Cora Dr., Flint, MI 48532, to Carisa Mays Bishop, Personal Representative.  
[NOTE: Approval order enclosed.]

**This matter was Placed on File. The motion carried.**

**130202**

Local Approval Notice/Michigan Liquor Control Commission (MLCC)/D & R Market, Inc./Ward 6

Local Approval Notice dated March 6, 2013, and received March 15, 2013, from MLCC to Flint City Clerk, re: The MLCC has received an application from 2 AAR, LLC, requesting to Transfer Ownership of a Specially Designated Distributor (SDD) and Specially Designated Merchant (SDM) licensed business with Sunday Sales permit (PM) and Direct Connection-I to D & R Market, Inc., located at 1402-1404 N. Chevrolet, Flint, Michigan, 48504, Genesee County, from 2 AAR, LLC, 3079 Shattuck Arms Blvd., Apt. 5, Saginaw, MI 48603. [NOTE: The application was cancelled pursuant to a request from an attorney.]

**This matter was Placed on File. The motion carried.**

**130204**

Changes/Cable Channel Lineup/Comcast Cablevision

Communication dated March 18, 2013, from Gerald W. Smith, Government Affairs Manager, Comcast, to Flint City Clerk, re: effective on or about May 22, 2013, Fox Business Network/Fox Business Network HD (ch. 06/243) will from the Digital Preferred Service to the Digital Starter Service.

**This matter was Placed on File. The motion carried.**

**130205**

Media Alert/Flint Public Art Project/Announcement of Design Winner

Media Alert received via e-mail on March 19, 2013, from the American Institute of Architects (AIA), re: The Flint Public Art Project and the Flint Chapter of the AIA will announce the winner of the \$25,000.00 grand prize in the inaugural Flat Lot competition to design and build a temporary summer pavilion on Flint's central downtown parking lot at 9:30 a.m. Thursday, March 21, 2013, at the John Gazall & Associates, Mott Building, 503 S. Saginaw Street, Flint.

**This matter was Placed on File. The motion carried.**

**130207**

Damage Claims

MAYFIELD, LINDA, 2518 Walter Street, Flint, MI (WARD 2)  
LANE, WILLIE C., 3130 Concord Street, Flint, MI (WARD 6)

**This matter was Placed on File. The motion carried.**

## **COMMUNICATIONS FROM CITY OFFICIALS**

**130194**

Press Release/City of Flint/Hiring of New Police Officers/Recruitment of Others

Press Release dated March 11, 2013, from Jason Lorenz, City of Flint Public

Information Officer, re: The City of Flint has seven new police officers on the job from the public safety millage passed last November by voters. The city's next step is to hold a recruitment drive by working with a local college, which will set up a Police Academy when the city has gathered sufficient interest from its efforts.

**This matter was Placed on File. The motion carried.**

**130195**

Press Release/City of Flint/Sunday Sales of Alcohol Before Noon Not Permitted on St. Patrick's Day.

Press Release dated March 12, 2013, from Jason Lorenz, City of Flint Public Information Officer, re: The City of Flint will not be able to permit Sunday alcohol sales before noon this Sunday, March 17, St. Patrick's Day. While the city adopted a resolution to allow a one-time exception to the Sunday morning alcohol ban, the Michigan Liquor Control Commission has taken the position that the city cannot create a one-day exemption.

**This matter was Placed on File. The motion carried.**

**130196**

Flint City Council/Public Notice/Special City Council Meeting/March 18, 2013

Public Notice posted March 14, 2013, re: The Flint City Council will hold a Special City Council Meeting, followed by a Finance Committee Meeting, at 5:30 p.m. Monday, March 18, 2013, in the City Council Chambers, 3rd Floor, City Hall, to consider a contract with the Karegnondi Water Authority (KWA).

**This matter was Placed on File. The motion carried.**

**130201**

Emergency Financial Manager (EFM) Order #10/Grant Applications

Order #10 issued by Emergency Financial Manager on March 15, 2013, "Grant Applications," re: "all city officials, department heads, division heads and employees shall adhere to ...requirements regarding the approval of any and all grant applications on behalf of the City of Flint or grant applications submitted by others which in any way involves the financial, programmatic or personnel support by the City of Flint." The five requirements, including the stipulation that only the Emergency Financial Manager or City Administrator are authorized to accept grants on behalf of the city, are included in the order.

**This matter was Placed on File. The motion carried.**

**130203**

Press Release/City of Flint/Flint Lifelines/Meeting Announcement

Press Release dated March 16, 2013, from Jason Lorenz, City of Flint Public Information Officer, re: Flint Lifelines, formerly CeaseFire Flint, will hold community meetings on the fourth Thursday of each month, beginning at 1 p.m. Thursday, March 28, 2013 at Flint Northwestern High School. The meetings are open to the public.

**This matter was Placed on File. The motion carried.**

**130206** Flint City Council/Public Notice/Finance Committee Meeting/March 20, 2013

Public Notice posted March 19, 2013, re: The Flint City Council will hold a Finance Committee Meeting at 5:30 p.m. Wednesday, March 20, 2013, in the City Council Committee Room, 3rd Floor, City Hall.

**This matter was Placed on File. The motion carried.**

**130208** Flint City Council/Public Notice/Special Affairs Committee Meeting/March 25, 2013

Public Notice posted March 22, 2013, re: The Flint City Council will hold a Special Affairs Committee Meeting at 5 p.m. Monday, March 25, 2013, in the City Council Committee Room, 3rd Floor, City Hall. A regular City Council meeting will immediately follow in the Council Chambers.

**This matter was Placed on File. The motion carried.**

**130209** Traffic Engineering/Note for Bulletin/Street-Sidewalk-Lane Closures

Notes for Bulletin (3) dated February/March 2013, for street, sidewalk, or lane closures, re: (1) Harrison Street, Saginaw Street and Second Avenue (cable failure-March 11-March 20); (2) First Street, Harrison Street, Wallenberg, Kearsley, Crapo, Horrigan, and Harrison (St. Patrick's Day Pot O' Gold 4-Mil Run/Walk-March 17); and (3) Chevrolet Avenue (University Corner Grand Opening-March 22).

**This matter was Placed on File. The motion carried.**

**Passed The Consent Agenda**

**A motion was made. The motion carried.**

**PUBLIC SPEAKERS****ROLL CALL**

*Councilperson Dale Weighill left at approximately 7 p.m.*

**Present:** Councilperson: Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, Kincaid and Councilperson Croom

**Absent:** Councilperson: Councilperson Weighill

**APPOINTMENTS****130169.1** Amendment/Reappointment/Zoning Board of Appeals/Christine Monk (Ward 6)

Amended resolution resolving that the Flint City Council recommends the reappointment of Christine Monk (821 Frank Street, Flint MI 48504 - Ward 6), to the Zoning Board of Appeals for a three-year term, commencing September

1, 2011, and expiring September 1, 2014. [By way of background, Ms. Monk's term on the Zoning Board of Appeals expired in September 2011, but she has continued since that time to serve.] [Resolution amended to fix typographical error in first paragraph of resolution from "Board of Review" to "Zoning Board of Appeals."]

**Sponsors:** Sheldon A. Neeley

**A motion was made by Councilperson Neeley, seconded by Councilperson Freeman, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130211**

Appointment/Zoning Board of Appeals/Chris Zuwala (Ward 4)

Resolution resolving that the Flint City Council recommends the appointment of Chris Zuwala (3510 Whittier Avenue, Flint MI 48506 - Ward 4) to the Zoning Board of Appeals for a three-year term, expiring September 1, 2013. [NOTE: By way of background, Gloria Kelly's term as the 4th Ward representative expired in September 2007, but she continued to serve until resigning in January 2013.]

**Sponsors:** Joshua M. Freeman

**A motion was made by Councilperson Freeman, seconded by Councilperson Poplar, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130212**

Reappointment/Zoning Board of Appeals/Birdie V. Brooks (Ward 5)

Resolution resolving that the Flint City Council recommends the reappointment of Birdie V. Brooks (1307 Columbia Lane, Flint MI 48503 - Ward 5), to the Zoning Board of Appeals for the remainder of a three-year term, expiring September 1, 2014. [By way of background, Ms. Brook's term on the Zoning Board of Appeals expired in September 2011, but she has continued since that time to serve.]

**Sponsors:** Bernard Lawler

**A motion was made by Councilperson Lawler, seconded by Councilperson Neeley, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**130213**

Resolution resolving that the Flint City Council recommends the reappointment of Marcia Braden (984 Barney Avenue, Flint MI 48503 - Ward 8), to the Zoning Board of Appeals for the remainder of a three-year term, expiring September 1, 2014. [By way of background, Ms. Braden's term on the Zoning Board of Appeals expired in September 2011, but she has continued since that time to serve.]

**Sponsors:** Michael J. Sarginson

**A motion was made by Councilperson Sarginson, seconded by Councilperson Freeman, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130214

Reappointment/Zoning Board of Appeals/David C. Veasley (Ward 9)

Resolution resolving that the Flint City Council recommends the reappointment of David C. Veasley (2618 Pinetree Drive, Flint MI 48507 - Ward 9), to the Zoning Board of Appeals for the remainder of a three-year term, expiring September 1, 2015. [By way of background, Mr. Veasley's term on the Zoning Board of Appeals expired in September 2009, but he has continued since that time to serve.]

**Sponsors:** Scott Kincaid

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130215

Appointment/Genesee County Land Bank Citizens' Advisory Council/Anthony Tucker (Ward 4)

Resolution resolving that the Flint City Council recommends the appointment of Anthony Tucker (2960 Henry Street, Flint MI 48506 - Ward 4) to the Genesee County Land Bank Citizens' Advisory Council for the remainder of a three-year term, expiring in January 2016. [NOTE: By way of background, Dan Anderson's term as the 4th Ward representative expired in January 2013.]

**Sponsors:** Joshua M. Freeman

**A motion was made by Councilperson Freeman, seconded by Councilperson Poplar, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130218

Reappointment/Hurley Board of Hospital Managers/Philip W. Shaltz

Resolution resolving that the Flint City Council approves the reappointment of Philip W. Shaltz (14144 Moffet Drive, Fenton, MI 48430) to an additional five-year term on the (Hurley) Board of Hospital Managers, with such term to commence May 1, 2013, and expire April 30, 2018.

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130219

Appointment/Hurley Board of Hospital Managers/Delrico Loyd

Resolution resolving that the Flint City Council approves the appointment of Delrico Loyd (2641 Westwood Parkway, Flint, MI 48507) to a five-year term on the (Hurley) Board of Hospital Managers, with such term to commence May 1, 2013, and expire April 30, 2018. [By way of background, Carl E. Mason was appointed in June 2008; his term expires April 30, 2013.]

**Approved**

**Substituted**

**A motion was made by Councilperson Neeley, seconded by Councilperson Lawler, that this matter be POSTPONED for March 27, 2013. The motion failed by the following vote:**

**Aye:** 3 - Councilperson Lawler, Councilperson Neeley and Councilperson Sarginson

**No:** 5 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

**Substituted**

**A motion was made by Vice President Nolden, seconded by Councilperson Freeman, that this matter be Approved. The motion carried by the following vote:**

**Aye:** 5 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, President Kincaid and Councilperson Croom

**No:** 3 - Councilperson Lawler, Councilperson Neeley and Councilperson Sarginson

**Absent:** 1 - Councilperson Weighill

130220

Appointment/Hurley Board of Hospital Managers/Donna Poplar

Resolution resolving that the Flint City Council approves the appointment of Donna Poplar (5277 Kimberly Woods Circle, Flint, MI 48504) to a five-year term

on the (Hurley) Board of Hospital Managers, with such term to commence May 1, 2013, and expire April 30, 2018. [By way of background, Frances Gilcreast was appointed in August 2008; her term expires April 30, 2013.]

**Approved**

**Substituted**

**A motion was made by Councilperson Lawler, seconded by Councilperson Neeley, that this matter be POSTPONED for March 26, 2013. The motion carried by the following vote:**

**Aye:** 7 - Councilperson Poplar, Vice President Nolden, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**No:** 1 - Councilperson Freeman

**Absent:** 1 - Councilperson Weighill

## RESOLUTIONS

### 130165.1 Amended Resolution/Contract/City of Flint/Karegnondi Water Authority (KWA)

Amended resolution resolving that city officials are authorized to enter into a contract with Karegnondi Water Authority (KWA) to purchase fifteen (15) units of capacity, AND, resolving that the City Administrator is authorized to provide KWA information needed to administer the contract, and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract. [NOTE: For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one-time fee of \$32,300. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount NOT-TO-EXCEED \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00, the buyer has a right to cancel the contract. Over the next 25 years, it is expected that continuing with Detroit will cost the region \$2.1 billion, compared to \$1.9 billion with a pipeline.] [NOTE: Contract not included.] [NOTE: Resolution amended from 18 to 15 units of capacity.]

**A motion was made by Councilperson Neeley, seconded by Councilperson Freeman, that this matter be Amended. The motion carried by the following vote:**

**Aye:** 5 - Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley and Councilperson Sarginson

**No:** 3 - Councilperson Poplar, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

### 130165.2 Amended Resolution/Contract/City of Flint/Karegnondi Water Authority (KWA)

Amended resolution resolving that city officials are authorized to enter into a contract with Karegnondi Water Authority (KWA) to purchase sixteen (16) units



of capacity, AND, resolving that the City Administrator is authorized to provide KWA information needed to administer the contract, and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract. [NOTE: For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one-time fee of \$32,300. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount NOT-TO-EXCEED \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00, the buyer has a right to cancel the contract. Over the next 25 years, it is expected that continuing with Detroit will cost the region \$2.1 billion, compared to \$1.9 billion with a pipeline.] [NOTE: Contract not included.] [NOTE: Resolution amended from 15 to 16 units of capacity.]

**A motion was made by Councilperson Neeley, seconded by Councilperson Freeman, that this matter be Adopted. The motion carried by the following vote:**

**Aye:** 7 - Councilperson Poplar, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**No:** 1 - Vice President Nolden

**Absent:** 1 - Councilperson Weighill

130216

Approval/The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint

Resolution that the City of Flint hereby approves and The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint, attached hereto. [NOTE: The City of Flint created the DDA, in accordance with Public Act 197 of 1975, as amended, and approved The Rules Governing the DDA in 1977. Public Act 197 has been amended and revised at various times since then, which required the proposed changes.] [NOTE: The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint is attached.]

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Amended. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

130216.1

Amended Resolution/Approval/The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint

Amended resolution that the City of Flint hereby approves and The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint, attached hereto. [NOTE: The City of Flint created the DDA, in accordance with Public Act 197 of 1975, as amended, and approved The Rules Governing the DDA in 1977. Public Act 197 has been

amended and revised at various times since then, which required the proposed changes.] [NOTE: The First Amendment & Restated Rules Governing the Downtown Development Authority (DDA) of the City of Flint is attached.] [Resolution amended for changes to rules.]

**A motion was made by Councilperson Freeman, seconded by Vice President Nolden, that this matter be Adopted. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

## **RESOLUTIONS - MAY BE REFERRED FROM S.A.**

**130210** Resolution/City Council/Mayor Dayne Walling/Request for Appointment of Transition Advisory Board

Resolution resolving that Mayor Dayne Walling and the Flint City Council request and recommend to Gov. Rick Snyder that a receivership transition advisory board be appointed for the City of Flint under Public Act 436 no later than July 1, 2013. [NOTE: On December 1, 2011, Gov. Snyder appointed Michael K. Brown as Emergency Manager under Public Act 4 for the City of Flint, due in part to a consistent deficit in the general fund, the decline in pooled cash, budget issues and unfunded liabilities for post-employment benefits. Due to the suspension and subsequent repeal of Public Act 4, Gov. Snyder appointed Edward J. Kurtz as Emergency Financial Manager under Public Act 72 for the City of Flint, effective August 9, 2012. Both the Emergency Manager and the subsequently appointed Emergency Financial Manager were authorized by virtue of their appointment to "act for and in the place and stead of the governing body and the office of chief administrative officer of the City of Flint." On March 28, 2013, Public Act 436 will become effective and provides that an emergency financial manager appointed and serving under state law immediately prior to the effective date shall continue to serve as an emergency manager under Public Act 436. As an alternative to continuation of an emergency manager, and if the financial emergency has been rectified, Public Act 436 authorizes the governor to appoint a receivership transition advisory board, which serves at the pleasure of the governor and monitors the affairs of the local government until the receivership is terminated.]

*No vote was taken on this amendment.*

**Amended**

**130210.1** Amended Resolution/City Council/Mayor Dayne Walling/Request for Appointment of Transition Advisory Board

Amended resolution resolving that Mayor Dayne Walling and the Flint City Council request and recommend to Gov. Rick Snyder that a receivership transition advisory board be appointed for the City of Flint under Public Act 436 no later than July 1, 2013. [NOTE: On December 1, 2011, Gov. Snyder appointed Michael K. Brown as Emergency Manager under Public Act 4 for the

City of Flint, due in part to a consistent deficit in the general fund, the decline in pooled cash, budget issues and unfunded liabilities for post-employment benefits. Due to the suspension and subsequent repeal of Public Act 4, Gov. Snyder appointed Edward J. Kurtz as Emergency Financial Manager under Public Act 72 for the City of Flint, effective August 9, 2012. Both the Emergency Manager and the subsequently appointed Emergency Financial Manager were authorized by virtue of their appointment to "act for and in the place and stead of the governing body and the office of chief administrative officer of the City of Flint." On March 28, 2013, Public Act 436 will become effective and provides that an emergency financial manager appointed and serving under state law immediately prior to the effective date shall continue to serve as an emergency manager under Public Act 436. As an alternative to continuation of an emergency manager, and if the financial emergency has been rectified, Public Act 436 authorizes the governor to appoint a receivership transition advisory board, which serves at the pleasure of the governor and monitors the affairs of the local government until the receivership is terminated.] [Six-page resolution amended for changes proposed by City Council, City Clerk and Mayor Dayne Walling.]

**A motion was made by Councilperson Freeman, seconded by Councilperson Poplar, that this matter be Adopted. The motion carried by the following vote:**

**Aye:** 8 - Councilperson Poplar, Vice President Nolden, Councilperson Freeman, Councilperson Lawler, Councilperson Neeley, Councilperson Sarginson, President Kincaid and Councilperson Croom

**Absent:** 1 - Councilperson Weighill

## MEETING SCHEDULE

## ADDITIONAL COUNCIL DISCUSSION

## ADJOURNMENT

*Having no further business, Council President Scott Kincaid adjourned the meeting at 8:59 p.m.*

*Respectfully transcribed and submitted,*

*Janell Johnson, Administrative Secretary to City Council*

EM SUBMISSION NO.: 2013EM041

PRESENTED: 3-28-13

ADOPTED: 3-29-13

BY THE EMERGENCY MANAGER:

**RESOLUTION TO PURCHASE CAPACITY FROM  
KAREGNONDI WATER AUTHORITY**

The Karegnondi Water Authority (KWA) is a governmental consortium of cities and counties in southeastern Michigan that was created to build a water pipeline that will provide water from Lake Huron to interested communities in Sanilac, Lapeer, and Genesee counties. The incorporating bodies that created the KWA are Sanilac County, Lapeer County, Genesee County, the City of Flint, and the City of Lapeer.

The City of Flint is currently in a year to year contract with the City of Detroit for the purchase of water. A study was conducted that projected that staying with Detroit will cost the region \$2.1 billion over the next 25 years. In contrast, if the region builds its own pipeline, the projected costs are \$1.9 billion over the same period. After the initial 25 year period, the projected costs would be less than 25% of the projected water costs from Detroit.

In order to build the pipeline, the KWA needs commitment from its members regarding the capacity that each member will purchase in the pipeline. The KWA is allowed to withdraw 85 million gallons of water per day. Capacity is available to members in increments of 1 million gallons per day known as units. For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one time fee of \$32,300.00. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount not to exceed \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00 the buyer has a right to cancel the contract.

The purchase of capacity along with the payment of other costs necessary to operate the pipeline gives the member a right to water for sale to its customers. The buyer has a right to resell capacity and water rights. Each party entering into a capacity contract shall also be entitled to appoint additional board members equal to the party's percentage share of the total capacity under contract.

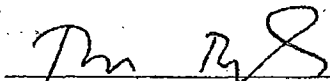
It is in the long term best interests of the City of Flint to enter into a contract with the KWA to purchase up to eighteen (18) units of capacity.


**IT IS RESOLVED** that City officials are authorized to enter into a contract with KWA to purchase up to eighteen (18) units of capacity.

**IT IS FURTHER RESOLVED** that the City Administrator is authorized to provide KWA information needed to administer the contract and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract.

**APPROVED AS TO FORM:**

**APPROVED AS TO FINANCE:**

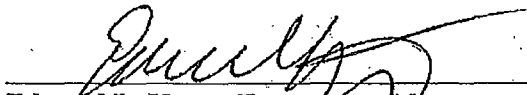
  
Peter M. Bade, City Attorney

  
For Gerald Ambrose, Finance Director

**EM DISPOSITION:**

ENACT ☒ FAIL ☐

DATED 3-29-13

  
Edward L. Kurtz, Emergency Manager

Flint

## Flint City Council approves resolution to buy water from Karegnondi, state approval still needed



[<http://connect.mlive.com/staff/dadams1/index.html>] By Dominic Adams [ [dadams5@mlive.com](mailto:dadams5@mlive.com) [<http://connect.mlive.com/staff/dadams1/posts.html>]  
Follow on Twitter [<http://www.twitter.com/dominicadams>]  
on March 25, 2013 at 10:46 PM, updated March 26, 2013 at 1:28 AM

FLINT, MI – Flint is one step closer to getting its water from Lake Huron as part of the Karegnondi Water Authority.

The vote, approved 7-1 at the Flint City Council meeting Monday, March 25

[[http://www.mlive.com/news/flint/index.ssf/2013/03/flint\\_city\\_council\\_again\\_delay.html](http://www.mlive.com/news/flint/index.ssf/2013/03/flint_city_council_again_delay.html)] , may have set in motion the end to Flint paying to get its water from Detroit.

Under the proposal, Flint would get 16 million gallons per day of raw water from Lake Huron, pipe it to Flint for treatment and then sell it to customers throughout the city. Another 2 million gallons per day would come from the Flint River and will be treated in Flint.

Mayor Dayne Walling said the Department of Environmental Quality must approve Flint's getting 2 million gallons per day from the Flint River.

Tuesday's meeting followed weeks of discussions and special meetings surrounding the resolution.

"We got there," Councilman Joshua Freeman said. "That's the important thing."

There were more than 50 people at Monday's meeting.

"Going with Karegnondi is the best decision. We have no opinion on the economics of the decision," said Rebecca Fedewa, Flint River Watershed Coalition executive director. "If we start drawing water out of the Flint River, we are at risk of having to start releasing water from our reservoirs."

Genesee County Drain Commissioner Jeff Wright said the decision must still be approved by a county water and waste advisory board. The KWA board will then be reconvened for final approval.

Wright said construction could start in May.

State treasury officials still must approve the city council's move because Flint has an emergency financial manager. All expenditures over \$50,000 must be approved.

Genesee County Drain Commissioner Jeff Wright has said that Flint would pay roughly \$6.4 million annually for water service if it joined the pipeline – a nearly \$4 million savings on what it pays Detroit for water.

Walling previously said the city would save \$19 million over eight years

[[http://www.mlive.com/news/flint/index.ssf/2013/03/flint\\_city\\_council\\_delays\\_deci.html](http://www.mlive.com/news/flint/index.ssf/2013/03/flint_city_council_delays_deci.html)] by getting water from the KWA.

"It's a historic night in the City of Flint," Walling said. "The savings will be less with the capacity level approved by city council because there will be increased treatment cost for the river water."

He said the DEQ told the city it needed to get 18 million gallons per day or there would have to be additional work done at Flint's water plant.

Flint's water plant and the Flint River is currently the backup for Flint and Genesee County, however, the plant only operates four times per year.

Councilman Bryant Nolden was the lone dissenting vote.

"It was a protest vote," Nolden said. "I knew they had enough votes. I just feel like the Flint River is our best option."

Karegnondi is the regional water authority that includes Genesee, Lapeer and Sanilac counties and the cities of Flint and Lapeer.

Flint is the second municipality, behind Genesee County, to officially decide to purchase raw water through the KWA. Lapeer city officials said they intend to purchase water, but an agreement has been finalized.

*Dominic Adams is a reporter for MLive-Flint Journal. Contact him at [dadams5@mlive.com](mailto:dadams5@mlive.com) or 810-241-8803. Follow him on Twitter [<http://www.twitter.com/dominicadams>], Facebook [<http://www.facebook.com/dominic.adams.1865>] or Google+ [<https://plus.google.com/103690672506808729911?rel=author>].*

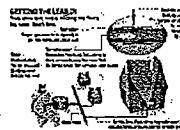


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Here's how that toxic lead gets into Flint water

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## GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

JEFFREY WRIGHT

COMMISSIONER

G-4608 BEECHER ROAD, FLINT, MI 48532  
PHONE (810) 732-1580 FAX (810) 732-1474



FOR IMMEDIATE RELEASE

CONTACT: Jeff Wright

March 26, 2013

810-287-1925

**What:** Jeff Wright Statement on Flint City Council Approving Resolution to Join KWA.

**When:** March 26, 2013

**Additional Info:** Jeff Wright, CEO of the KWA, today praised the Flint City Council for voting to approve a resolution to officially have the City of Flint join the KWA and its' water line.

"I have said from the beginning that this decision must be made by Flint's City Council and Mayor," said Wright. "I appreciate the council voting the way they did, but even more than that, I am glad the residents of Flint were able to have their voices heard via their elected officials." The next step in the process will come with the KWA Board executing the contract for the City.

"The most important aspect from the vote is the fact that we as an Authority can move forward knowing Flint's intentions," said Wright.

Despite Emergency Manager Ed Kurtz publicly supporting the project, Wright had made a vote by council a condition of Flint joining the KWA so the residents would have their say.

"There is a basic tenet that government is best when it has local control. We saw that with the council vote. Nobody, whether they live in Flint, Grand Blanc, Davison, Fenton, or anywhere in Genesee County, should have these types of decisions made by people who live outside of their community," said Wright.

At the next Water and Waste Advisory Board meeting a vote will be taken to award a contract for construction of the intake portion of the water line. All bids were submitted to the board at their last meeting for review.





RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF TREASURY  
LANSING

ANDY DILLON  
STATE TREASURER

Mr. Edward Kurtz  
Emergency Manager  
City of Flint  
1101 South Saginaw Street  
Flint, MI 48502

April 11, 2013

Dear Mr. Kurtz:

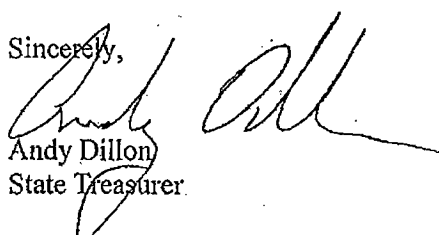
Thank you for your March 29, 2013 letter, which is attached for reference. As the Emergency Manager for the City of Flint ("Flint" or "City"), you have asked for my concurrence, pursuant to Public Act 436 of 2012, the Local Financial Stability and Choice Act, to authorize a contract in excess of \$50,000.00 not subject to competitive bidding. This request was related to the City entering into an agreement with the Karegnondi Water Authority (KWA) for provision of raw water for the City.

In considering your request, I took note of the following facts in support of Flint joining KWA. First, there is widespread support in the City for this move, including the support of the Mayor, the City Council, and the Emergency Manager. Second, this move will provide a unique opportunity for the City and County to partner on an important project, which will hopefully lead to future regional collaboration. Third, the Department of Environmental Quality is supportive of the City participating in the KWA project. Finally, your representations that this deal will lead to substantial savings for the City over the coming decades, savings that are desperately needed to help with the turnaround of the City of Flint.

It is my understanding that the Detroit Water and Sewer Department is making a final best offer to Genesee County and the City of Flint next Monday, April 15, 2013. As such, this approval will be effective at 5 pm on April 16, 2013 after receiving written notice from the City that either no such offer was presented to the county and the City or that an offer was received and was rejected in good faith based upon specified objections.

For the reasons described above and subject to the conditions set forth herein, pursuant to Section 12 (3) of PA 436 of 2012, I am authorizing you to proceed with adopting the resolution and entering into a contract with KWA.

Sincerely,

  
Andy Dillon  
State Treasurer

Flint

## Flint council supports buying water from Lake Huron through KWA



[<http://connect.mlive.com/staff/dadams1/index.html>] By Dominic Adams | [dadams5@mlive.com](mailto:dadams5@mlive.com) [<http://connect.mlive.com/staff/dadams1/posts.html>]  
Follow on Twitter [<http://www.twitter.com/dominicadams>]  
on March 25, 2013 at 7:17 PM, updated March 26, 2013 at 7:43 AM

FLINT, MI -- Flint residents may soon get their water from Lake Huron.

The Flint City Council voted 7-1 to get 16 million gallons per day from the Karegnondi Water Authority.

"This is about compromise," said Councilman Sheldon Neeley.

Neeley got support from Councilman Joshua Freeman, after the two were previously at odds about the amount the city should withdraw from Lake Huron.

Councilman Bryant Nolden was the lone "no" vote.

"It was a protest vote," Nolden said. "I just feel like the Flint River is our best option."

Genesee County Drain Commissioner said construction of the pipeline could start in May.

The city currently pays to get its water from Detroit.

State treasury officials still must approve the city council's move because Flint has an emergency financial manager. All expenditures over \$50,000 must be approved.

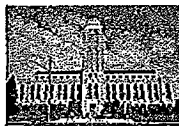
*Dominic Adams is a reporter for MLive-Flint Journal. Contact him at [dadams5@mlive.com](mailto:dadams5@mlive.com) or 810-241-8803. Follow him on Twitter [<http://www.twitter.com/dominicadams>], Facebook [<http://www.facebook.com/dominic.adams.1865>] or Google+ [<https://plus.google.com/103690672506808729911?rel=author>].*

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Resolution: 130165.2

Presented: 3-11-13

Adopted: 3-25-13

**AMENDED RESOLUTION TO PURCHASE CAPACITY  
FROM KAREGNONDI WATER AUTHORITY**

**BY THE MAYOR:**

The Karegnondi Water Authority (KWA) is a governmental consortium of cities and counties in southeastern Michigan that was created to build a water pipeline that will provide water from Lake Huron to interested communities in Sanilac, Lapeer, and Genesee counties. The incorporating bodies that created the KWA are Sanilac County, Lapeer County, Genesee County, the City of Flint, and the City of Lapeer.

The City of Flint is currently in a year to year contract with the City of Detroit for the purchase of water. A study was conducted that projected that staying with Detroit will cost the region \$2.1 billion over the next 25 years. In contrast, if the region builds its own pipeline, the projected costs are \$1.9 billion over the same period. After the initial 25 year period, the projected costs would be less than 25% of the projected water costs from Detroit.

In order to build the pipeline, the KWA needs commitment from its members regarding the capacity that each member will purchase in the pipeline. The KWA is allowed to withdraw 85 million gallons of water per day. Capacity is available to members in increments of 1 million gallons per day known as units. For each unit of capacity that a member purchases, the buyer shall pay to the KWA a one time fee of \$32,300.00. Additionally, the buyer shall pay to the KWA not less than \$32,300.00 per unit per year until such time as water is made available to the buyer. After water is made available, the buyer shall pay to the KWA an estimated amount not to exceed \$355,300.00 per unit per year until such time that the bonds are paid in full. If it is determined that the costs per unit will exceed \$355,300.00 the buyer has a right to cancel the contract.

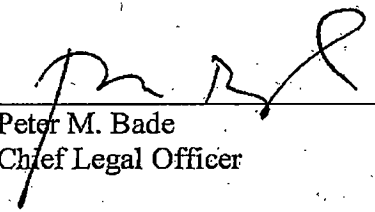
The purchase of capacity along with the payment of other costs necessary to operate the pipeline gives the member a right to water for sale to its customers. The buyer has a right to resell capacity and water rights. Each party entering into a capacity contract shall also be entitled to appoint additional board members equal to the party's percentage share of the total capacity under contract.

The City of Flint has decided that it is in its long term best interests to enter into a contract with the KWA to purchase SIXTEEN (16) units of capacity, plus TWO (2) units from the Flint River.

**IT IS RESOLVED** that City officials are authorized to enter into a contract with KWA to purchase SIXTEEN (16) units of capacity, plus TWO (2) units from the Flint River.

**IT IS FURTHER RESOLVED** that the City Administrator is authorized to provide KWA information needed to administer the contract and, with approval of the Chief Legal Officer, to make minor (non-material) modifications to the contract.

APPROVED AS TO FORM: )

  
\_\_\_\_\_  
Peter M. Bade  
Chief Legal Officer

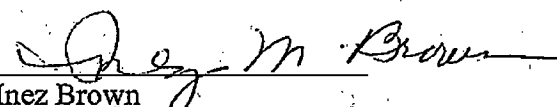
APPROVED AS TO FINANCE:

\_\_\_\_\_  
Gerald Ambrose  
Finance Director

APPROVED BY MAYOR:

\_\_\_\_\_  
Dayne Walling  
Mayor

APPROVED BY CITY COUNCIL  
ON: March 25, 2013

  
\_\_\_\_\_  
Inez Brown  
Clerk, City of Flint

**APPROVED BY  
CITY COUNCIL**

**MAR 25 2013**

**Olszewski, Rosemarie (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, March 17, 2015 9:17 AM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** Fwd: Flint

Here's one of the things we talked about getting for Harvey.

Sent from my iPhone

Begin forwarded message:

**From:** "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov>  
**Date:** March 17, 2015 at 8:23:17 AM EDT  
**To:** "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov>, "Benzie, Richard (DEQ)" <BENZIER@michigan.gov>  
**Subject:** RE: Flint

The City has currently contracted with two main engineering consulting firms. The primary contact for each firm is listed below.

Warren Green with Lockwood, Andrews & Newman, Inc.  
630-918-2494  
and  
Marvin Gnagy with Veolia North America  
419-450-2931

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

-----Original Message-----

**From:** Wurfel, Brad (DEQ)  
**Sent:** Monday, March 16, 2015 4:44 PM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Flint

Hey, all. Harvey has a meeting with city residents Wednesday. Need that enforcement info ASAP, tomorrow at latest and sooner is better. Also, on the water filter issue, spoke with Wyant today and he much liked the idea of having a specific product recommendation come from one of the cities contractors.

Steve, can you please get contact information for the best contractor in Flint to address this?  
Thank you!

Sent from my iPhone

## **Thelen, Mary Beth (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, October 07, 2015 6:51 PM  
**To:** Shaler, Karen (DEQ)  
**Cc:** Pallone, Maggie (DEQ); Krisztian, George (DEQ); Thelen, Mary Beth (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Dykema, Linda D. (DHHS)  
**Subject:** RE: DRAFT Summary Protocol Document  
**Attachments:** DRAFT Recommended Screening Strategies for Assessing and Reducing Lead in Drinking Water in Schools.docx

With the attachment....

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, October 07, 2015 6:50 PM  
**To:** Shaler, Karen (DEQ)  
**Cc:** Pallone, Maggie (DEQ); Krisztian, George (DEQ); Thelen, Mary Beth (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Dykema, Linda D. (DHHS)  
**Subject:** DRAFT Summary Protocol Document

For the Director. Not for inclusion in the Governor's package.

## Strategy for Assessing and Reducing Lead in Drinking Water in Schools

### Summary

**Objective:** To determine the levels of lead (Pb) at cooking and drinking water outlets within schools served by the city of Flint municipal water supply.

#### Action Steps:

- **Develop a Sampling Plan**

Detailed instructions will be provided to each school regarding actions to be taken the day prior to sampling and the day of sampling.

Each tap/outlet used for cooking or drinking water will be sampled.

Samples will be collected at prescribed intervals to determine whether (1) an outlet is a source of lead, (2) the supply pipe is a source of lead, (3) brief flushing may provide reduced lead levels. Other samples, as necessary, to identify a unique concern identified by the plumbing assessment.

All samples will be analyzed by the MDEQ certified drinking water laboratory.

- **Develop a Plumbing Profile**

By identifying what materials are used in facility plumbing, and where they are located, it is possible to determine where monitoring and what sampling regimen will be effective in analyzing water likely to contain lead.

A plumbing assessment will assist in determining how the potable water piping flows in the building and the order in which samples will be collected.

- **Evaluate the Analytical Results**

The analytical results will be evaluated and compared to the 15 ppb Pb action level benchmark established by U.S. EPA in the federal lead and copper rule in the Safe Drinking Water Act.

- Action in Response to Findings

Any tap/outlet with lead levels that exceed 15 ppb may be resampled, removed from service, or other measure(s) taken. Short term and more permanent measures/controls will be identified.

- Follow-up Sampling

Follow-up sampling may be necessary to ensure that any site specific measures/controls have been effective.

- Communication

An effective communications strategy is critical to explain potential risks, describe technical solutions and build trust among parents, school and local health department officials, and the water supplier. Public health agencies will provide information to assist schools with their communications.

Development of this summary protocol is based on U.S. EPA technical guidance entitled "3Ts for Reducing Lead in Drinking Water in Schools (EPA 816-B-05-008)", the American Water Works Association guidance "Assisting Schools and Child Care Facilities in Addressing Lead in Drinking Water" and other state and local health department school lead sampling and assessment guidance.



**Olszewski, Rosemarie (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, March 17, 2015 6:33 AM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ)  
**Subject:** Fwd: Flint

Just FYI. Still no word from drinking water. Will get it to you as soon as I have it.  
On Tarmac in Detroit. Plane departs in 10 minutes. Get a couple hours in Miami starting around 10 am.  
b

Sent from my iPhone

Begin forwarded message:

**From:** <WurfelB@michigan.gov>  
**Date:** March 16, 2015 at 4:43:34 PM EDT  
**To:** "Liane Shekter Smith (DNRE)" <SHEKTERL@michigan.gov>, Stephen Busch  
<BUSCHS@michigan.gov>, Richard Benzie <BENZIER@michigan.gov>  
**Subject:** Flint

Hey, all. Harvey has a meeting with city residents Wednesday. Need that enforcement info ASAP, tomorrow at latest and sooner is better. Also, on the water filter issue, spoke with Wyant today and he much liked the idea of having a specific product recommendation come from one of the cities contractors.

Steve, can you please get contact information for the best contractor in Flint to address this?

Thank you!

Sent from my iPhone

## **Briefing: Flint Water System Press Conference**

Thursday, Oct. 8, 2015

Mott Foundation/Commerce Center Building Ground Floor

519 S. Saginaw St., Flint

Communications: Sara Wurfel, 517-599-3470, [wurfels@michigan.gov](mailto:wurfels@michigan.gov)

Dave Murray, 517-449-8343, [murrayd1@michigan.gov](mailto:murrayd1@michigan.gov)

### **Purpose:**

We're announcing the decision to reconnect Flint to the Detroit Water and Sewerage Department, a collaborative effort between the state government, Flint city government and the Mott Foundation.

### **High level points:**

- Protecting the health and safety of our residents in Flint and across Michigan is always our top priority.
  - All Michigan residents need access to safe, clean water.
- That's why today, in consultation with health and water experts in our state agencies, I'm advocating reconnecting the Flint drinking water with the Great Lakes Water Authority.
- I'm recommending to my partners in the Legislature that the state government provide \$6 million of the needed \$12 million to reconnect with authority.
  - The Flint city government has agreed to cover \$2 million of this cost, and the Charles Stewart Mott Foundation is generously offered to donate \$4 million.
- What you are seeing here today is a community coming together to work toward solving a problem.
  - I appreciate the assistance of Mayor Walling, and the U.S. Environmental Protection Agency.
  - This is a collaborative approach, and I appreciate that community organizations including the United Way and come forward to assist.

### **Agenda:**

9:00 AM - 9:45 AM	Gov meets with Mayor Walling in [Room 1]
9:45 AM - 10:00 AM	Pre-Brief in [Room 2]
10:00 AM - 10:01 AM	Harvey Hollins kicks off press conference; introduces Governor
10:01 AM - 10:05 AM	Governor gives remarks
10:05 AM - 10:06 AM	Harvey Hollins introduces Mayor Dayne Walling
10:06 AM - 10:10 AM	Mayor Walling gives remarks
10:10 AM - 10:11 AM	Harvey Hollins introduces DEQ Director Dan Wyant
10:11 AM - 10:15 AM	Director Wyant gives remarks
10:15 AM - 10:16 AM	Harvey Hollins introduces DHHS Director Nick Lyon
10:16 AM - 10:17 AM	Director Nick Lyon introduces Dr. Eden Wells
10:17 AM - 10:20 AM	Dr. Eden Wells remarks
10:20 AM - 10:21 AM	Harvey Hollins introduces Ridgway White of Mott Foundation
10:21 AM - 10:25 AM	Ridgway White gives remarks
10:25 AM - 10:35 AM	Q&A from the podium
10:35 AM	Event concludes; Governor departs

### **Attendees: Roughly 20 in audience**

Susan	Borrego	Chancellor, U of M Flint
Oscar	Overton	Pastor
Alfred	Harris	Pastor

Latrelle	Holmes	Pastor
Jim	Ananich	Michigan Senate
Sheldon	Neely	Michigan House
Phil	Phelps	Michigan House
Jeff	Wright	Drain Commissioner, Genesee County
Amy	Hovey	Dan Kildee office
Jamie	Gaskin	Dan Kildee office
Tim	Herman	Flint Chamber of Commerce
Brian	Larkin	Flint Chamber of Commerce
Eric	Mays	Flint City Council
Jacqueline	Poplar	Flint City Council
Kerry	Nelson	Flint City Council
Joshua	Freeman	Flint City Council
Wantwaz	Davis	Flint City Council
Herbert	Winfrey	Flint City Council
Monica	Galloway	Flint City Council
Vicki	VanBuren	Flint City Council
Scott	Kincaid	Flint City Council

#### Speaker comments:

RDS – Collaboration led to solution, outline of solution

Mayor Walling – Importance of solution to Flint

Dan Wyant – School testing results, overview of steps on transition from Flint River to DWSD

Nick Lyon – DHHS involvement

Dr. Eden Wells – Testing of water going forward, use of filters approved by NSF

Ridgway White – Importance of collaboration/commitment to Flint

#### Talking points:

- Protecting the health and safety of our residents in Flint and across Michigan is always our top priority.
  - All Michigan residents need access to safe, clean water
- That's why today, in consultation with health and water experts in our state agencies, I'm advocating reconnecting the Flint drinking water with the Great Lakes Water Authority.
- I'm recommending to my partners in the Legislature that the state government provide \$6 million of the needed \$12 million to reconnect with authority.
  - The Flint city government has agreed to cover \$2 million of this cost, and the Charles Stewart Mott Foundation is generously offered to donate \$4 million.
  - The Michigan Department of Health and Human Services and the Department of Environmental Quality today also is committing an additional \$3.5 million for water filters, free lead testing through the state laboratory for Flint water customers, and hiring additional staff to conduct health exposure monitoring for lead in drinking water.
- What you are seeing here today is a community coming together to work toward solving a problem.
  - I appreciate the assistance of Mayor Walling, and the U.S. Environmental Protection Agency.
  - This is a collaborative approach, and I appreciate that community organizations including the United Way and come forward to assist.
- Today's announcement is an important step as we move forward together.
  - But it is not our first step, nor will it be our last.

- This announcement builds on work we've already set in place.
  - That includes \$4.2 million in state grants and loan restructuring to help identify and fix infrastructure problems.
  - State agencies have been working closely with Flint leaders and the community for more than a year.
- There will be more to do.
  - Flint has an aging water infrastructure system with challenges that we – together – will continue to address.
- We will continue to test Flint schools for lead levels in drinking water.
  - Schools across the state might also have questions.
  - The Department of Environmental Quality will work with districts across the state to provide testing.
    - Districts can send water samples and paperwork and the nominal charge. (It costs \$26 per sample).
- The steps outlined in the comprehensive action plan are still in effect.

## Olszewski, Rosemarie (DEQ)

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, March 17, 2015 4:26 PM  
**To:** Howard Croft; Brent Wright; Daugherty Johnson; Dayne Walling; donna.cole; gdn2@aol.com; James Henry; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; Larry Koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Natasha Henderson; Norb Birchmeier; Pete Levine; rob.nicholas@veolia.com; Robert Nicholas; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: TTHM Draft Letter  
**Attachments:** Draft - Flint Letter to Healthcare Providers.docx

Howard,

I made a few changes to the draft letter...in red (see attached)....mainly to make a more clear distinction between the locational running annual average and the stand-alone quarter (February 2015) results and how it affects the number of sites in compliance. If you have any questions, feel free to call me.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**From:** Howard Croft [mailto:hcroft@cityofflint.com]  
**Sent:** Monday, March 16, 2015 4:28 PM  
**To:** Brent Wright; Daugherty Johnson; Dayne Walling; donna.cole; gdn2@aol.com; Howard Croft; James Henry; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; Larry Koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; rob.nicholas@veolia.com; Robert Nicholas; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green  
**Subject:** TTHM Draft Letter

Team,

We have received our notice from the DEQ and our next step is to have this group preview the letter that we intend to send to the public along with it. I have forwarded everyone a draft of the letter for any comments and I am also sending again all of the literature that was forwarded from Mr. Wright of the EPA and DR. Rose of MSU.

We expect to have an additional FAQ ready and out to this group on Tuesday and we anticipate the violation notice going out in the near future.

The citizens advisory group will meet again on this Thursday, we are currently looking to have another Technical Advisory Committee with this group in early April.

Thank you,

**Howard Croft**

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

## DRAFT Letter to Flint Healthcare Providers

The safety and quality of Flint's water has been in the news for months. We have worked hard to address these issues and have succeeded in bringing Flint's water within the state's safety guidelines on all measures, including TTHM (total trihalomethanes). Excess TTHM triggered the initial letter to our customers earlier this year.

Even though Flint water now meets the standards and is testing significantly below the state's allowable contamination levels, we are required to send out another letter to residents because the *annual* quarterly testing average is not yet below the state's allowable average.

Flint tests for TTHM – a byproduct of the water chlorination process – at eight different sites in the city. When we began using the Flint River as a source in April of 2014, our first round of quarterly testing for TTHM was conducted in May. At that time, only two testing sites were below the allowable maximum; in August, every site was above the allowable maximum.

The City, with the help of LAN engineering, developed an Operation Evaluation Report (OER) which contained an action plan to address the issue. That plan was implemented with steps including upgrading the ozone treatment process at the Water Treatment Plant (WTP), **complete softening**, increasing water main/hydrant flushing to decrease stagnation, small scale testing of treatment to identify areas of improvement, applying overall improvements to the WTP through operational changes and to the distribution system through water circulation modeling

Because the public notice is based on a **locational running** annual average of quarterly results a notice was not required until November, at which time all but one testing **location** was below the allowable levels. **Our most recent testing in February 2015 showed all locations well below state allowable levels; however, the locational running annual average (based on the four most recent quarters – May 2014 – Feb. 2015) results in all but two locations being below the allowable level.** (See the attached graph outlining our progress.)

We have taken many steps to continue to improve the safety and quality of Flint's water, including bringing in international urban water system consultants, Veolia North America, and establishing two advisory committees: a Citizens Advisory Committee, along with a Technical Advisory Committee made up of representatives from the University of Michigan, Michigan State University, Kettering University, Mott Community College, Genesys, McLaren, and Hurley Hospitals along with local health officials including the Genesee Medical Society the Genesee County Public Health Department, the Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency.

We have also established a hotline 810-787-6537 and a place for continuing updates on the city's website [cityofflint.com](http://cityofflint.com) and have encouraged residents who are concerned about their water to report it to us immediately so that we can make arrangements for on-site testing. Although we have been offering this for more than a month, to date only a few residents have requested on-site testing. All residents wishing to have their water tested can call the hotline number or send an email to [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com).

Despite our progress, we are required by law to once again advise residents about what *was* an excess of TTHM in Flint's water system at the eight testing sights last year. The letter – a draft of which is enclosed for your information – includes legally required language recommending that residents who have (severely compromised immune systems, have an infant, or are elderly) should contact their physician. This is standard language from the U.S. EPA which is included in every water quality or water related report the City publishes, regardless of whether there are specific health or quality concerns, and is used by other municipalities nationwide. We failed to alert you in advance of our original letter we were required to send out earlier this year – and we don't want to make that mistake again. We have enclosed a fact sheet and a list of Frequently Asked Questions in an effort to help you respond to any inquiries you may get from patients.

We recognize that Flint's water system may still be challenged with *quality* issues such as discoloration or odor but we assure you the *safety* of the water meets all state standards. You should also know that the City also publishes its monthly tests for a wide variety of water treatment components, including chloride levels, on its website at [cityofflint.com/?page\\_id=5643](http://cityofflint.com/?page_id=5643).

We urge you to contact the City of Flint Water Treatment Plant with any specific questions or concerns you may have on this issue. We will do our absolute best to get you the answers you need.

Sincerely,



## **Thelen, Mary Beth (DEQ)**

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**Subject:** RDS - REMARKS (AHeaton) Press Conference Re: Flint Water  
**Location:** Mott Foundation Conference Center, 503 S. Saginaw, Flint

**Start:** Thu 10/8/2015 10:00 AM  
**End:** Thu 10/8/2015 10:35 AM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** GovCalendar  
**Required Attendees:** Agen, Jarrod (GOV); Biehl, Laura (GOV); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Hollins, Harvey (GOV); Clayton, Stacie (GOV); Lyon, Nick (DHHS); Grijalva, Nancy (DHHS)

**Purpose:** Press conference regarding Flint water

### **Program Participants:**

Flint Mayor Dayne Walling  
DEQ Director Dan Wyant  
DHHS Director Nick Lyon  
Dr. Eden Wells, DHHS  
Ridgeway White, Mott Foundation  
Harvey Hollins

### **Non-Speaking Invitees: (all attendance unconfirmed)**

Sen. Jim Ananich  
Rep. Tim Greimel  
Rep. Phil Phelps  
Rep. Sheldon Neely  
Flint City Councilmembers  
Faith Based Community members  
U of M Flint Chancellor Susan Borrego (RDS talked to 10/7/15 at the Higher Ed Summit)  
Amy Hovey, Staff of Congressman Dan Kildee  
Jamie Gaskin, CEO of Genesee County United Way  
Tim Herman, CEO of Flint and Genesee Chamber of Commerce  
Brian Larkin, Flint and Genesee Chamber of Commerce (fmr. EO staff)

### **Agenda:**

10:00 AM – 10:01 AM Harvey Hollins kicks off press conference; introduces Governor  
10:01 AM – 10:05 AM Governor gives remarks  
10:05 AM – 10:06 AM Harvey Hollins introduces Mayor Dayne Walling  
10:06 AM – 10:10 AM Mayor Walling gives remarks  
10:10 AM – 10:11 AM Harvey Hollins introduces DEQ Director Dan Wyant  
10:11 AM – 10:15 AM Director Wyant gives remarks  
10:15 AM – 10:16 AM Harvey Hollins introduces DHHS Director Nick Lyon  
10:16 AM – 10:17 AM Director Nick Lyon brief comments, introduces Dr. Eden Wells  
10:17 AM – 10:20 AM Dr. Eden Wells remarks

10:20 AM – 10:21 AM Harvey Hollins introduces Ridgway White of Mott Foundation  
10:21 AM – 10:25 AM Ridgway White gives remarks  
10:25 AM – 10:35 AM Q&A from the podium (SW to moderate)  
10:35 AM Event concludes; Governor departs

#### OPEN Press

#### High level points:

- Protecting the health and safety of our residents in Flint and across Michigan is always our top priority.
  - All Michigan residents need access to safe, clean water
- That's why today, in consultation with health and water experts in our state agencies, I'm advocating reconnecting the Flint drinking water with the Great Lakes Water Authority.
- I'm recommending to my partners in the Legislature that the state government provide \$6 million of the needed \$12 million to reconnect with authority.
  - The Flint city government has agreed to cover \$2 million of this cost, and the Charles Stewart Mott Foundation is generously offered to donate \$4 million.
- What you are seeing here today is a community coming together to work toward solving a problem.
  - I appreciate the assistance of Mayor Walling, and the U.S. Environmental Protection Agency.
  - This is a collaborative approach, and I appreciate that community organizations including the United Way and come forward to assist.

#### Attachments:

1. Briefing
2. FAQs for Media Q&As
3. Press Release



Briefing.pdf



FAQs for Media  
QAs.pdf



Press Release.pdf

\*\*\*Staff/Detail\*\*\*

Venue POC: Kathryn Thomas (mobile?) PPI

Security POC: Phil Snyder (mobile) PPI

Advance: CLU

Comms: All

## **Thelen, Mary Beth (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, March 13, 2015 6:49 PM  
**To:** Hollins, Harvey (GOV)  
**Cc:** Wyant, Dan (DEQ)  
**Subject:** Part II  
**Attachments:** FOIA Request Flint Water.doc  
**Importance:** High

OK D-

This is the second issue I mentioned earlier today.

In December, our staff became peripherally aware that the hospitals in Genesee were seeing an uptick in Legionnaires cases.

Legionnaires is a water-borne illness. It essentially is a type of pneumonia caused by a bacteria. It is treated with antibiotics. Untreated, it can be deadly. It most often manifests in nursing homes and assisted living facilities, because the transmission is through water vapor getting into lungs – via air conditioners, vaporizers or low-flow shower heads that produce a lot of misting. You can drink water with this bacteria in it and not get sick – it has to enter the lungs in vapor.

I don't have any details on the cases, but here is what I understand to this point:

- More than 40 cases reported since last April. That's a significant uptick – more than all the cases in the last five years or more combined.
- April / May is usually the start of Legionnaires season – it proliferates in warmer months – but April also is the point at which the city switched to the Flint River as a source.
- County Health Departments are supposed to perform epidemiological tracebacks on all confirmed cases of this disease, to locate the source and address it. Genesee County Health had not done this work as of November. At a January meeting with area hospitals, MDCH, DEQ and others, Nick Lyon reportedly directed the county health folks, in terms not uncertain, to get this done as a priority. As I'm sitting here today, it still is not done to my knowledge.
- My counterparts at MDCH informed me today that they cannot step in unless they are invited or unless the outbreak is multi-county. They've not been invited until, I believe, today. That may be in part because of the email string and letter I've enclosed here, which was unknown to MDCH until I shared it over to them.

The email thread below is best read bottom-to-top, and read prior to reading the enclosed FOIA to the city.

Essentially, Jim Henry with Genesee County Health is putting up the flare. He's made the leap formally in his email that the uptick in cases is directly attributable to the river as a drinking water source – this is beyond irresponsible, given that is his department that has failed to do the necessary traceback work to provide any conclusive evidence of where the outbreak is sourced, and it also flies in the face of the very thing a drinking water system is designed to do.

DEQ did not receive this FOIA, which appears designed to buttress his position in the email -- that sections of the water delivery system may be harboring this bacteria. We think it would be highly unlikely that anything would be found around the plant, where the water is treated. Most often, this bacteria forms at the building / residential point in the system. Legionnaires is NOT among the 90 water contaminants screened in the Safe Drinking Water Act, but in the absence of action by county health, our staff are now considering taking samples from various points in the system and working with DCH's lab to test for it, if for no other reason than to rule it out.

Regardless, the accusation is serious and the nature of the communication leaves me thinking we would be advantaged to bring together all the agencies asap to share what information we have and develop a response / screening strategy before the weather gets warm again.

I realize these are long emails. Thanks for your patience.

b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713

PPI cell

**From:** Shekter Smith, Liane (DEQ)

**Sent:** Thursday, March 12, 2015 8:41 AM

**To:** Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)

**Cc:** Shaler, Karen (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ)

**Subject:** FW: Information Request and Documentation

**Importance:** High

The district received this late Tuesday.

Steve Busch has indicated that the district has not received a meeting request from Jim Henry or the Genesee County Health Department as indicated in his email below.

The FOIA is specifically directed to the City of Flint not the DEQ.

While the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

Seems like the next step is to communicate with DCH and possibly develop a joint strategy/response. Not sure who in Exec wants to take the lead on this. Steve Busch and Mike Prysby will continue to be lead for us on this. They have been in contact with DCH recently but only to learn that little progress has been made in identifying a source or sources for the illnesses.

**EMAIL FROM DEQ TO HENRY SENT THIS AFTERNOON:**

Mr. Henry,

The January 27, 2015, FOIA request you provided was directed to the City of Flint, not the DEQ. The DEQ has no record of a FOIA request from your office for such information. It is our understanding that the City has responded to your FOIA request, has helped you adequately redefine your request within the City's scope of public record to address such ambiguities as "any additional areas of concern", and provided you with additional information beyond the scope of your request.

The DEQ fully recognizes the public health threat posed to individuals that contract Legionnaires' Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act. Your email below claims that you have explicitly explained the situation to our Department. However, since contacting our office early last October to indicate a rise in cases, we have not received any further information regarding your epidemiological investigation into this matter.

Further, conclusions that legionella is coming from the public water system without the presentation of any substantiating evidence from your epidemiologic investigation appears premature and prejudice toward that end.

It is highly unlikely that legionella would be present in treated water coming from the City of Flint water treatment plant given the treatment plant's use of ozone along with complete treatment and chlorine disinfect contact time to comply with federal surface water treatment rules for potable water. Detections of total coliform or heterotrophic bacteria in the City's public water distribution system indicate an environment where bacterial growth may be supported. However, there is no direct correlation that can be made to the presence of legionella. While total organic carbon levels in potable water may serve as a food source for bacteria growth in private plumbing system, water temperatures in the City's distribution system are below legionella growth range, and chlorine residual levels would also limit such growth.

Our office agrees that water main breaks, water leaks, and system repairs are possible vectors for legionella to enter the public water system. These should be investigated as part of your epidemiology. DEQ staff can be made available to assist GCHD and the City regarding such matters, but to date no request by GCHD for any such meeting has been received, let alone declined as alleged in your email.

If GCHD is seeking assistance to complete its epidemiological investigation regarding this matter, such resource requests should be directed to the Michigan Department of Community Health. Our Office agrees that a multi-agency partnership would be beneficial to move forward and develop a unified response. In that respect, if our Office can be of any further assistance you may contact me directly.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>

**Date:** March 10, 2015 at 6:40:17 PM EDT

**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>

**Subject:** Information Request and Documentation

Hello everyone,

The Genesee County Health Department has made several written and verbal requests for specific information since October, 2014, including a Freedom of Information Act Request on January 27, 2015. The information still has not been received and the city's lack of cooperation continues to prevent my office from performing our responsibilities.

The Genesee County Health Department has the responsibility to conduct illness investigations and consider all potential sources, this is not optional. In 2014, Genesee County experienced a significant increase of confirmed Legionella illnesses relative to previous years. Legionella can be a deadly, waterborne disease that typically affects the respiratory system.

The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

This situation has been explicitly explained to MDEQ and many of the city's officials. I want to make sure, in writing that there are no misunderstandings regarding this significant and urgent public health issue. The Trihalomethane issues "pale in comparison" to the potential public health risks of Legionella.

I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
Flint, MI 48502

## **RE: Flint Water Plant Information Request**

Dear FOIA Coordinator,

Under provisions of the Michigan Freedom of Information Act (MCLA 15.231 et seq; MSA 4.1801 (1) et seq) please provide copies of the following:

Provide specific water testing locations and laboratory results within the City of Flint public water system for Coliform, E-coli, Heterotrophic Bacteria and Trihalomethanes from January 1, 2010 to January 27, 2015. Provide any additional water testing that has been conducted for identifying potential public health risks. Include any available mapping of the water testing areas.

Provide a map delineating the boundaries of the City of Flint water distribution system. Include any changes to the boundaries, along with corresponding dates from January 1, 2014 to January 27, 2015.

Provide a map or list of locations, detailing dead ends, pooling, low pressure and any additional areas of concern within the City of Flint water distribution system. Include any modifications to the water distribution system addressing concerns, along with corresponding dates from January 1, 2014 to January 27, 2015.

If you determine that any of the requested information is exempt from disclosure, please detail what is being withheld and cite the exemption under FOIA. I anticipate the request being filled within five working days of receipt of this letter, as provided under FOIA. Please contact me at (810) 257-3618 if there are fees associated to comply with this request.

Sincerely,

**Jim Henry**

Jim Henry  
Environmental Health Supervisor  
Genesee County Health Department  
630 S. Saginaw Street  
Flint, MI 48502

**Better Life Through Better Health**

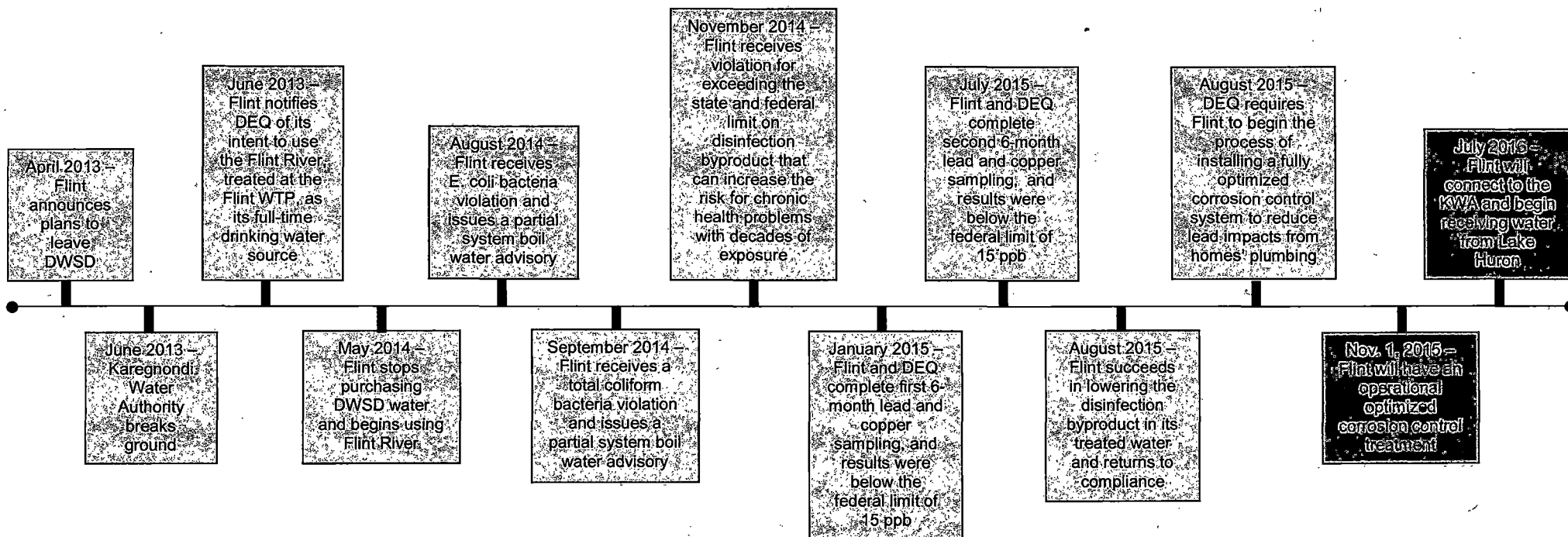
**Floyd J. McCree Courts & Human Services Building** ♦ 630 S. Saginaw Street, Ste. 4 ♦ Flint, Michigan 48502-1540

**Burton Branch** ♦ G-3373 S. Saginaw Street ♦ Burton, Michigan 48529

Main Phone 810-257-3612 ♦ Visit us at: [www.gchd.us](http://www.gchd.us)

# Drinking Water in Flint

## April 2013 - July 2016





## Thelen, Mary Beth (DEQ)

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, March 06, 2015 9:00 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Tap Filters

Sorry, should have copied you.  
b

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Thursday, March 05, 2015 4:26 PM  
**To:** Hollins, Harvey (GOV); 'Wyant, Dan (WyantD@michigan.gov)'; Agen, Jarrod (GOV)  
**Cc:** Baird, Richard (GOV); 'Wurfel, Sara (GOV) (Wurfels@michigan.gov)'  
**Subject:** FW: Tap Filters

Harvey,  
Since group call Tuesday I have been working out how the filter idea might take shape.

To reiterate some key points so we're all clear:

1. DEQ does not inspect individuals' homes in a situation like this. It's the city's system, their operators handle all complaints and maintenance. In fact, our folks alerted me that the city's got union rules in place forbidding any contractor from touching the system.
2. DEQ's role is limited to ensuring the plant is operating to state standards and the water it produces meets potability standards. The aesthetic issues drawing concern from residents – color, odor, taste – stem from a variety of things. Age of the system and prolonged lack of upkeep is the leading factor. But in some areas, another contributing factor is changes in water flow – source used to come from the south, now comes from the north, so some pipes are flowing in reverse, stirring up whatever was settled for a long time. In some sections, large pipes that historically served large communities are now serving a much smaller customer base, contributing to water stagnating in the system. In some areas, household connections are old and worn, so two neighbors may be having dramatically different experiences. My point is, the challenge takes many forms and there's no single solution that will bring sweeping change. The two consultants hired by the city have, as I understand it, both reinforced this idea in their assessments, so that's good.
3. The fix for this will be years in the making, truly. Even if full funding were available, 'big dig' projects can't all happen at once. The city needs to get an assessment of its infrastructure so it can prioritize its needs, and I understand they're working on that. In the near term, maintenance this spring / summer – things like cleaning the pipes in key sections and flushing the system via the hydrants – could offer some short term results. I know nobody wants to just wait for spring, but that is something important to keep in mind.
4. In the meantime, the group discussed possibly making home water filters available somehow. The National Safety Foundation is a Michigan company, headquartered and founded in Ann Arbor, that develops standards for all kinds of infrastructure. They're a globally recognized source for standard setting. A look at their site reveals there are myriad filtration options on the market and within each type (faucet mounted, whole house line filters, etc) there are filters that focus on different aspects of purification.

If this idea begins to get legs, I'd suggest testing some different models on the local water at the customer level to see if they work. I'd also suggest the idea be focused on tap-mounted models to promote clean, appealing drinking water. And I'd suggest this program could be funded in whole or in part by the state, but would need to be administered by the city (reinforcing the fact that they own, operate and service the system). I've got some information on filter models below.

Two more considerations: One, while the state has provided residents in some communities with bottled water in the past, it always has to do with their water being somehow contaminated – as in, some kind of chemical plume that impaired local drinking water sources. This would be the first time the state took steps to deal with what is an aesthetic issue on a system where the water is meeting state drinking water standards.

Water filter info:

ANSI NSF Standard 42 Covers bacteriostasis, taste and odor (associated only with chlorine removal), and other aesthetic conditions

[http://standards.nsf.org/apps/group\\_public/download.php/19895/NSF\\_42-11%20-%20watermarked.pdf](http://standards.nsf.org/apps/group_public/download.php/19895/NSF_42-11%20-%20watermarked.pdf)

ANSI NSF Standard 53 Covers health effects removal

[http://standards.nsf.org/apps/group\\_public/download.php/19896/NSF\\_53-11a%20-%20watermarked.pdf](http://standards.nsf.org/apps/group_public/download.php/19896/NSF_53-11a%20-%20watermarked.pdf)

It is important to note that the filters are not required to meet all aspects of the standard, only the portions they want to make claims for. So product information for each filter must be reviewed to determine its applicability.

Most of these point of use filters are basic activated carbon filters that simply remove taste and odor specifically associated with chlorine, not other things like iron, manganese, hydrogen sulfide, etc. that can also impact taste and odor as well as color.

It is important to recognize that taste and odor is generally an individual preference and such standards have for the most part not been developed because groups of individuals may still consider taste and odor issues to exist even after levels for such a standard have been met.

Other considerations are that the test water for such filters attempting to meet the standard uses hardness levels of 170 mg/L or less. Flint's water at times may be above this level, which could then impact filter performance and longevity.

Most of these filters are designed to be replaced after 100 gallons or less of use, a period of about 3 months for most households. In addition the tests allow for initial pressure drops of up to 15 psi. This may limit use in households that already rely on minimum pressure within their household plumbing.

Regarding the health effects standards, as the Flint water system already meets such requirements, with the exception of the current TTHM locational running annual average, there is little point to the use of these filters for such a purpose.

To the point you'd asked about the other day, while Flint and Detroit are leading examples of unmaintained infrastructure, Flint is not alone by any means.

This recent infrastructure report card

<http://www.infrastructurereportcard.org/michigan/michigan-overview/>

Lists Michigan with a \$13.8 Billion need over the next 20 years.

<http://www.infrastructurereportcard.org/a/#p/state-facts/michigan>

Here's a link to the 2009 Report Card for Michigan Infrastructure  
<http://www.michiganreportcard.com/>

From the report:

"A significant portion of the state's primary distribution system is nearing 100 years old. CWS are facing a significant challenge to maintain the vast network of aging, underground infrastructure. Within the city of Detroit alone, approximately 80% of its distribution piping was installed prior to 1940, which is not unusual for CWS in Michigan."

"The age of the majority of the state's distribution system is the primary contributor to normal decay and failure. In many cases, pipe life has far exceeded useful service life. Much of the older water systems consist of undersized mains constructed of materials such as unlined cast iron pipe. Minor fluctuations in system flows or pressure may cause red water complaints and even result in pipe failure. All CWS should have routine flushing and valve maintenance programs; however many are hesitant due to the time and cost."

"Under the Stage 2 Disinfection Byproducts Rule, all CWS that disinfect are required to provide increased trihalomethane (THM) and haloacetic acid (HAA5) monitoring due to the potential byproducts of chlorine reactions within the pipe system. Corrosion, scale, solid suspension on the interior sidewall of pipe, in addition to the age and condition of the system will require diligent rehabilitation investment to maintain system integrity."

"While better materials and advanced technology is available to replace the aging distribution system, resources remain scarce when compared with the magnitude of the rehabilitation task at hand. Too often, distribution system replacement costs are underfunded and the first item to be slashed when budget problems arise. Overall, distribution system maintenance is reactionary in much of the older systems. Since the majority of the antiquated system will require removal and replacement beyond the CWS funding resources for systematic upgrade, a reactionary rehabilitation program is inevitable and must be funded accordingly."

Call or email me if you need anything further.

b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713

PPI

cell

## **Thelen, Mary Beth (DEQ)**

---

**From:** Henry, James <jhenry@gchd.us>  
**Sent:** Friday, October 23, 2015 10:39 AM  
**To:** Howard Croft; Thelen, Mary Beth (DEQ); Wells, Eden (DHHS); Krisztian, George (DEQ); Tommasulo, Karen (DEQ); dwalling@cityofflint.com; nhenderson@cityofflint.com; Edgerton, Shelly (LARA); Dykema, Linda D. (DHHS); Sygo, Jim (DEQ); Wyant, Dan (DEQ); skammer@cityofflint.com; Shaler, Karen (DEQ)  
**Cc:** MVALACAK@gchd.us  
**Subject:** Flint Schools

Hello,

As you may know, Genesee County Health Department (GCHD) has respectfully declined the request to conduct the sampling at the Flint schools. GCHD is reconsidering this decision and is in the process of determining the feasibility.

I will be in contact with George to further discuss details.

Thank you  
Jim

Jim Henry RS, MBA  
Environmental Health Supervisor  
Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
630 S. Saginaw St., Suite 4  
Flint, MI 48502-1540  
Phone (810) 257-3618 Fax (810) 257-3125  
E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



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For a copy of the Health Department's Notice of Information Practices, contact the Health Department or visit the Health Department's website at <http://www.gchd.us/>

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]  
**Sent:** Tuesday, October 20, 2015 8:25 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Wells, Eden (DHHS); Krisztian, George (DEQ); Dayne Walling ([dwalling@cityofflint.com](mailto:dwalling@cityofflint.com)); Natasha Henderson ([nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)); Edgerton, Shelly (LARA); Dykema, Linda D. (DHHS); Tommasulo, Karen (DEQ); Henry, James; Sygo, Jim (DEQ); Wyant, Dan (DEQ); Sean Kammer ([skammer@cityofflint.com](mailto:skammer@cityofflint.com)); Shaler, Karen (DEQ)  
**Subject:** Re: Weekly Coordination Meetings

Mary,

I can confirm the scheduling of a Water Plant tour for this Friday immediately following our morning meeting.

Thank you,

On Tue, Oct 20, 2015 at 8:18 AM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

I just sent a separate note to Sean asking to confirm Friday, October 23, 10:00-11:30 for the weekly meeting with Flint.

**Howard**, if the plant tour can happen after that meeting, that would be great. Please confirm if that will work out or please provide another date/time this week. Ideally it would be good for Friday since we most likely will be in Flint for a 10:00 meeting.

Thank you.

P.S. Sean, I have copied you as I don't believe you were copied in the first note. Looking forward to hearing from you.

Mary Beth

Mary Beth Thelen

Management Assistant to Director Dan Wyant

Department of Environmental Quality

Constitution Hall, 6th Floor South

Phone: 517-284-6712 or 284-6700 (new numbers)

Fax: 517-241-7401

[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]

**Sent:** Tuesday, October 20, 2015 7:51 AM

**To:** Edgerton, Shelly (LARA)

**Cc:** Wells, Eden (DHHS); Krisztian, George (DEQ); Dayne Walling ([dwalling@cityofflint.com](mailto:dwalling@cityofflint.com)); Natasha Henderson ([nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)); Dykema, Linda D. (DHHS); Tommasulo, Karen (DEQ); Henry, James ([jhenry@gchd.us](mailto:jhenry@gchd.us));

Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)

**Subject:** Re: Weekly Coordination Meetings

I will make sure that everything is in place for a tour of the Water Plant.

On Sun, Oct 18, 2015 at 6:04 PM, Edgerton, Shelly (LARA) <[EdgertonS1@michigan.gov](mailto:EdgertonS1@michigan.gov)> wrote:

Friday will work for me as well.

**Shelly Edgerton**

Chief Deputy Director & Chief Data Systems Officer

Department of Licensing & Regulatory Affairs

[edgertons1@michigan.gov](mailto:edgertons1@michigan.gov)

Phone: [517 241-4805](tel:5172414805)

Cell: PPI

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Sent from my iPad

On Oct 18, 2015, at 1:06 PM, Wells, Eden (DHHS) <[WellsE3@michigan.gov](mailto:WellsE3@michigan.gov)> wrote:

That time works for me, George,

Eden

Eden V. Wells, MD, MPH, FACPM

Chief Medical Executive

Michigan Department of Health and Human Services

201 Townsend Street, 5th Floor CVB

Lansing, MI 48913

Phone: 517-335-8011

[wellse3@michigan.gov](mailto:wellse3@michigan.gov)

---

**From:** Krisztian, George (DEQ)

**Sent:** Saturday, October 17, 2015 1:25 PM

**To:** Dayne Walling ([dwalling@cityofflint.com](mailto:dwalling@cityofflint.com)); Natasha Henderson ([nhenderson@cityofflint.com](mailto:nhenderson@cityofflint.com)); Dykema, Linda D. (DHHS); 'Howard Croft'; Edgerton, Shelly (LARA); Wells, Eden (DHHS); Tommasulo, Karen (DEQ); Henry, James ([jhenry@gchd.us](mailto:jhenry@gchd.us))

**Cc:** Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ)

**Subject:** Weekly Coordination Meetings

Greetings everyone,

As per our discussion yesterday at City Hall, I am sending out an e-mail to the group so that we can have a convenient distribution list for everyone involved in the weekly coordination meetings.

I was able to meet with Jim Henry at the GCHD yesterday and I am happy to report that it appears that he will be able to join our group. Jim and the GCHD will certainly be valuable partners as we move forward with our task.

I would like to suggest that we continue to meet on Friday's if that is feasible. I think that Friday will work nicely as it will allow us to have a fresh retrospective on the week that just passed and allow us to plan for the upcoming week. I think the 10:00 AM time slot worked well as it allows folks in Lansing to get into the office to take care of some details before heading out and it allows sufficient time in the afternoon to get additional work done.

I would like to get a tour of the Flint Water Treatment Plant scheduled for next week if possible. It could either occur in conjunction with the weekly coordination meeting or it could potentially be scheduled for a different day. It would probably be most efficient to link it with the weekly meeting. I would like to bring Eric Shaw with me for the tour. Eric would take video of the tour as part of the message that we (all of the partners) are moving forward.

Please respond to the group if you have additional staff to be included in the cc line. Also respond to the group if I inadvertently excluded anyone from the "To" line.

Perhaps Sean and Mary Beth can work together to get the weekly coordination meetings scheduled.

Thanks to all!  
George

George L. Krisztian  
Flint Action Plan Coordinator  
Laboratory Director  
Michigan Department of Environmental Quality  
Desk ph (517) 284-6719  
Cell ph PPI

--

**Howard Croft**

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

--



**Howard Croft**

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810,766.7135 Ext.2043

[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

## Olszewski, Rosemarie (DEQ)

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, March 19, 2015 10:24 AM  
**To:** Howard Croft  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: HC Letter & FAQ's

Howard,

It appears that my edits were not included in the final letter. The 6<sup>th</sup> paragraph down should be revised such that residents understand the difference between the Locational Running Annual Average (LRAA) and the results from the individual quarter (Feb 2015) ...to avoid possible confusion when they read the DEQ PN template which states that two of the eight sites are above the TTHM standard (this being based on the LRAA). Also, the words "annual average" needs to be replaced with Locational Running Annual Average (LRAA).

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]  
**Sent:** Thursday, March 19, 2015 9:09 AM  
**To:** Brent Wright; Daugherty Johnson; Dayne Walling; donna. cole; [gdn2@aol.com](mailto:gdn2@aol.com); Howard Croft; James Henry; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; [larry.koehler@mcc.edu](mailto:larry.koehler@mcc.edu); Laura Sullivan; Michael Glasgow; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Nicholas; [rosejo@msu.edu](mailto:rosejo@msu.edu); Russell Hudson; Samir Matta; Warren Green; Elizabeth Murphy; Robert Bincsik; Robert Case; Jason Lorenz; Kelly Rossman-McKinney; Sharon Emery; Gerald Ambrose  
**Subject:** HC Letter & FAQ's

Technical Team Members,

Attached please find the final copy of a letter to the health community along with a Frequently Asked Question list.

These documents are ready for distribution among your peers and others. We anticipate mailing out the actual violation notice at the beginning of next week.

I will email everyone on this list when we determine a date for the next Technical Committee Meeting.

Thank you,

--  
**Howard Croft**

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

**Olszewski, Rosemarie (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, March 19, 2015 11:28 AM  
**To:** Bennett, Charles (DEQ); Thomas Hutchings (thutchings@cityofflint.com)  
**Cc:** Kammer, Stephanie (DEQ); Case, Robert; Busch, Stephen (DEQ); 'bwright@cityofflint.com'  
**Subject:** RE: PEAS call

Brent investigated the PEAS call and left me a voicemail with his findings. He confirmed that the residue was a previous lime sludge leak and frozen residue still needs to be cleaned up. The source of the sheen was from a previous storm sewer discharge; however, there was no storm sewer discharge this morning and conditions appeared clear. Brent also followed up with the concerned citizen. Brent will provide further follow-up (via e-mail) concerning this PEAS call.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

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**From:** Bennett, Charles (DEQ)  
**Sent:** Thursday, March 19, 2015 10:10 AM  
**To:** Thomas Hutchings (thutchings@cityofflint.com)  
**Cc:** Kammer, Stephanie (DEQ); Prysby, Mike (DEQ); Case, Robert; Busch, Stephen (DEQ)  
**Subject:** PEAS call

Tom, I just spoke with a gentleman that reported a discharge to the Flint River south of Carpenter Rd at Bray. The complainant stated that the material is whitish and may have a sheen also. He said it looks like crews have done some excavating along the bike path near this discharge. Attached are photos that I received a moment ago from the caller.

Also, you may want to contact Brent Wright about this matter as well, since our Drinking Water engineer has contacted him about this also (see attachment). Please let me know what you find.

thanks,  
chuck

Charles Bennett, PE  
DEQ Water Resources Division  
Lansing District Office  
[BennettC4@michigan.gov](mailto:BennettC4@michigan.gov)  
ph 517-284-6659; fax 517-241-3571

Director FBI

Thelen, Mary Beth (DEQ)

From: Craig, John (DEQ)  
Sent: Thursday, December 10, 2015 4:54 PM  
To: Feuerstein, Heather (DEQ)  
Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)

## Attorney-Client Privilege

Per your request. No longer potential litigation. -- John

OK

John Craig, Chief, Enforcement Section  
Office of Waste Management and Radiological Protection | Department of Environmental Quality | 4<sup>th</sup> Floor South, Constitution Hall -- Lansing  
P: 517-384-6546 | F: 517-373-4797

D

All,

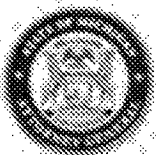
## Attorney-Client Privilege

Richard

Richard S. Kuhl  
Assistant Attorney General  
Environment, Natural Resources  
and Agriculture Division  
6<sup>th</sup> Floor, G. Mennen Williams Building  
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Lansing, MI 48909

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[kuhlr@michigan.gov](mailto:kuhlr@michigan.gov)



AG's ofc  
will soon  
need all on  
files on  
Flint  
only  
mt  
12/15/15

2-1 DAG  
File  
cc Sygo  
Liane  
Steve B.

# **Attorney-Client Privilege**

# **Attorney-Client Privilege**

## Olszewski, Rosemarie (DEQ)

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 17, 2015 2:02 PM  
**To:** Howard Croft (hcroft@cityofflint.com); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com; Daugherty Johnson (djohnson@cityofflint.com)  
**Cc:** Gerald Ambrose (gambrose@cityofflint.com); nhenderson@cityofflint.com; Prysby, Mike (DEQ)  
**Subject:** Water Quality Optimization Strategy

Howard,

As Mike Prysby and I mentioned during our phone call earlier today, the City should be taking action to optimize water quality in the City's distribution system which will in turn provide the City's water customers with water quality that helps limit the potential for legionella occurrence in premise plumbing. It is recognized that contraction of Legionnaires' Disease is not from ingestion of potable water and not regulated under Safe Drinking Water Act requirements. Further, there is currently no direct evidence of legionella in the City's public water system. However, actions by the City of Flint water system can help minimize the potential for an outbreak in customer plumbing systems.

These actions include the following:

- Water main pigging and flushing to remove biofilm, tuberculation, and sediment throughout the distribution system. Failure to remove such material will limit the effectiveness of any disinfectant. Pigging is the preferred process and equipment can be obtained at minimal cost. As the growth range for legionella starts at 68 degrees F, conducting this work as soon as possible in the spring and early summer with cooler temperatures would help reduce the potential for formation under warmer water conditions.
- Maintain pH levels of 7.2-7.8 in finished water and distribution system when possible to maximize the disinfection and oxidation potential of the hypochlorous acid residual (versus the less potent hypochlorite ion). Any optimized corrosion control plan practices regarding pH levels must be taken into consideration.
- Maintain a minimum free chlorine residual of 0.5 mg/L throughout the distribution system when possible. Continuous residual at this level has been shown to be effective in control of legionella. (This will need to be balanced with requirements to limit TTHM formation and comply with the TTHM standard.)
- Continuous operation and optimization of the ozone treatment equipment to treat raw source water. Ozone is highly effective in the destruction of legionella bacteria.
- Conduct routine monitoring for legionella bacteria at the water treatment plant tap and at locations in the distribution system. Note: sample locations must take water directly off the main and not be from premise plumbing systems. Distribution locations could include storage tank inlets or pumping stations. Monitoring at the WTP plant tap would demonstrate removal of any legionella present in raw source water. A private laboratory that specializes in water sample analysis for legionella would need to be used.
- Optimize water treatment plant operation for pathogen reduction under surface water treatment rule requirements. Optimizing the removal for similar pathogens can help reduce the potential for legionella.

A conference call with City staff would probably be best to facilitate further discussions of these actions in more detail. Mike and I can make ourselves available this week to discuss and answer any questions.



Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

## **Shaler, Karen (DEQ)**

---

**From:** Shaler, Karen (DEQ) on behalf of Wyant, Dan (DEQ)  
**Sent:** Tuesday, October 06, 2015 5:05 PM  
**To:** Scott, Allison (GOV); Muchmore, Dennis (GOV); Agen, Jarrod (GOV); Dickinson, Sarah (GOV)  
**Subject:** Flint Drinking Water Action Plan Update - FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGED

The Flint Drinking Water Action Plan was announced on October 2, 2015. It included the following:

- Testing in Flint public schools immediately
- Offered free water testing to Flint residents
- Provided free water filters to residents with concerns or who are included in state assistance programs
- Expanding health exposure testing of individual homes
- Accelerating corrosion controls in the Flint drinking water system
- Accelerating water system improvements to address replacing lead service lines
- Expediting the completion of the Karegnondi Water Authority pipeline
- Expanding a Safe Drinking Water Technical Advisory Committee
- Named Dr. Eden Wells as the Flint drinking water public health advisor
- Boosted a comprehensive lead education program

### Testing in Flint Public Schools Immediately

Samples were taken on October 2 and were received at DEQ laboratory over the weekend. Test results to date indicate 37 samples tested, 4 of which exceeded a federal action level, and 1 of those 4 was a significant outlier. We will be compiling detailed information about which schools and area codes the test results came from and will be providing that information in our next update.

We have met with DHHS, and we are working on developing response protocols, a communications plan, and guidance for schools when this data is reported.

### Offered Free Water Testing to Flint Residents

We have received 4 sets of samples from Flint that represent individual residents. We will be compiling the total number and the results of those samples and reporting in a future report.

### Provided Free Water Filters to Residents with Concerns or Who are Included in State Assistance Programs

DHHS held organizational meetings in Flint on October 5, and filter distribution by DHHS started on October 6. Nick Lyon in DHHS is taking the lead in filter distribution.

### Expanding Health Exposure Testing of Individual Homes

Dr. Wells and Dan Wyant have been in conversations about a protocol for exposure testing. Dr. Wells will take the lead on developing the protocol.

## Accelerating Corrosion Controls in the Flint Drinking Water System

A conference call was held with U.S. EPA Regional Administrator Susan Hedman and national corrosion control experts. We asked two questions:

1. Which is a safer water source – DWSD or Flint River?
2. If you don't have an opinion on the safer source, what criteria should we use for an evaluation?

EPA staff would not commit to a preference, but their evaluation of the criteria clearly lead to the conclusion that DWSD was a safer water source. EPA committed to submitting technical assistance to the Safe Drinking Water Technical Advisory Committee (Advisory Committee) meeting, which will be held on October 7 at 2:00 p.m. in Flint City Hall.

DEQ met with the Flint Mayor, the city manager, and their water staff. Flint agreed to expediting corrosion controls. We discussed the agenda for the Advisory Committee meeting. The Advisory Committee will be asked to evaluate two respective water sources at their Wednesday meeting.

We expect the Advisory Committee to recommend the water source that would address not only lead safety but also other water safety issues.

## Accelerating Water System Improvements to Address Replacing Lead Service Lines

Conversations with Congressman Kildee and EPA have clarified the state would be allowed to use Drinking Water Revolving Loan funds to replace private drinking water service lines. Senator Ananich has been approached to introduce language clarifying the state's authority.

## Expediting the Completion of the Karegnondi Water Authority Pipeline

Dan Wyant has talked to Genesee County Drain Commissioner Jeff Wright. Mr. Wright has provided a list of issues that would help expedite the completion of the Karegnondi Water Authority pipeline. They include truck weight and frost law exemptions, talent identification, and expediting permits.

## Expanding a Safe Drinking Water Technical Advisory Committee

EPA has appointed their national technical expert to the Advisory Committee, and we have appointed Alfred Franzblau, M.D., Professor of Environmental Health Services, University of Michigan, to the Advisory Committee.

## Named Dr. Eden Wells as the Flint Drinking Water Public Health Advisor

## Boosted a Comprehensive Lead Education Program

## Other Updates

- Dan Wyant was interviewed on October 6 by CBS Evening News during filter distribution in Flint. Questions asked were:
  - Was it a mistake to go to Flint River water?

Answer: We draw water from the surface waters; we treat it to safe drinking water standards. At issue is lead exposure. Lead exposure must be addressed. Actions are being taken to address the issue.

- Did you put kids at risk?

Answer: Lead exposure is a serious issue, and steps need to be taken to limit lead exposure.

- Why did it take so long?

Answer: DEQ has been there from the beginning addressing the issue of Flint water. Recent tests justify and require the actions taken. Action steps address short-term, intermediate, and long-term lead issues to ensure public safety and confidence of the drinking water.

- Dan Wyant also spoke to the Governor about Flint funding needs. A meeting is scheduled for October 7 at 8:00 a.m. to further discuss proposals.
- What we are telling Flint citizens is:
  - Have your water tested
  - Use only cold water for drinking, cooking, and preparing formula
  - Run water before use if it has not been used for several hours
  - Obtain a water filter approved for lead removal
  - Purchase lead-free plumbing components
  - Remove entire lead service lines

**Olszewski, Rosemarie (DEQ)**

---

**From:** Hollins, Harvey (GOV)  
**Sent:** Tuesday, March 17, 2015 4:47 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Clayton, Stacie (GOV); Sygo, Jim (DEQ)  
**Subject:** Re: City of Flint Information - Consultants

Thank you. Has anyone from DEQ talked with them? Do they know I will be calling?

Best,  
Harvey

On Mar 17, 2015, at 9:54 AM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

Good Morning Harvey,

The consultants listed below are working with Flint and are in the best position to recommend a water filter system. The locals should be asked to use their consultants to recommend a technology.

Warren Green with Lockwood, Andrews & Newman, Inc.  
630-918-2494

and

Marvin Gnagy with Veolia North America  
419-450-2931

Thank you.

Dan Wyant  
Director

-----  
Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

## **Thelen, Mary Beth (DEQ)**

---

**Subject:** City of Flint Mayor Meeting at 10:00  
**Location:** Flint Municipal Center located at 1101 S. Saginaw Street, Flint 48505.

**Start:** Tue 10/6/2015 8:45 AM  
**End:** Tue 10/6/2015 2:00 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** Thelen, Mary Beth (DEQ)  
**Required Attendees:** Wyant, Dan (DEQ); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'; Krisztian, George (DEQ); Prysby, Mike (DEQ)  
**Optional Attendees:** Feuerstein, Heather (DEQ); Pallone, Maggie (DEQ); Shaler, Karen (DEQ); Tommasulo, Karen (DEQ)

**Importance:** High

**Meeting notice includes travel time – Plan to leave at 8:45 with the Director – meet at security desk area.**

### **Attendees from DEQ:**

Director

Jim Sygo

George K.

Mike Prysby, Director has invited you to attend if your schedule permits. **Please advise. Thanks.**

Mary Beth (284-6712).

Karen T. and Maggie – FYI only.

=====

### **Flint Location:**

We are in the Flint Municipal Center located at 1101 S. Saginaw Street, Flint 48505. Metered parking is available on both sides of the street in front of City Hall and on the side streets.

Mr. Wyant and guests can park in the Employee Parking Lot located on Seventh Street (as you exit I-69 at Saginaw Street - make a left turn onto Saginaw Street staying in the right lane. On the right they will see a Gas Station and a Pawn Shop. That corner is Seventh; turn right and drive to the Employee Parking Lot which will be on the left) If someone will call me at **810.237.2035** I will meet them at the back entrance and escort them to the Mayor's Suite.

### **Mary Beth's Contact Info for this meeting:**

Maxine Murray

Executive Assistant to

Mayor Dayne Walling

1101 S. Saginaw Street

Flint, MI 48502  
810.237.2035 Telephone  
810.766.7218 Fax

=====  
**The Mayor is available to meet on Tuesday, October 6, 10:00-12:00.**

Please hold this time for now until I confirm with the Director.

Thanks.

MBT

**Olszewski, Rosemarie (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 10:37 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Flint Water Meeting  
**Attachments:** SomnioGlobal\_Ozone disinfection technology.pdf

---

**From:** Clayton, Stacie (GOV)  
**Sent:** Friday, March 06, 2015 2:05 PM  
**To:** Hollins, Harvey (GOV); 'Gerald Ambrose'; 'Maxine Murray'; Thelen, Mary Beth (DEQ); Wurfel, Brad (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ); 'Natasha Henderson'; Shekter Smith, Liane (DEQ)  
**Subject:** Flint Water Meeting

Greetings All,

Attached is a brief overview of the information to be presented on Monday at the 1:00pm meeting with Steve Linder of the Sterling Corporation regarding Flint Water. The meeting will be held at the Sterling Corporation's offices on 106 W. Allegan, Ste. 2 in Lansing. I have sent the appointment and here are the list of attendees:

Harvey Hollins, Director, Governor's Office of Urban and Metropolitan Initiatives  
Gerald Ambrose, Flint Emergency Manager  
Natasha Henderson, Flint, City Manager  
Liane Shekter Smith, Chief, Office of Drinking Water and Municipal Assistance (DEQ)  
Stephen Busch, Office of Drinking Water and Municipal Assistance (DEQ)  
Brad Wurfel, Director of Communications (DEQ)

Please let me know if you have any questions, thank you.

Stacie

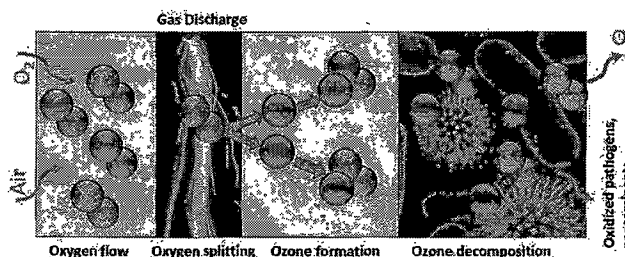
**Stacie Clayton, Assistant Director**  
Harvey Hollins III, Director  
Governor's Office of Urban and Metropolitan Initiatives  
3044 West Grand Boulevard, Ste. 14-650  
Detroit, MI 48202  
313.456.4994 (office)  
[claytons3@michigan.gov](mailto:claytons3@michigan.gov)



## Chemical Free Water Disinfection by Ozone

Today about 98% of water treatment facilities in the U.S. use some form of chlorine to disinfect drinking water supplies. It is a cost effective method for destroying potentially harmful bacteria and viruses. However, chlorine's ability to interact with organic compounds in water leads to trihalomethanes (THMs) formation. Especially, river or lake water with high level of organic matter require heavy chlorination to combat high level of bacteria, resulting in dangerous levels of THMs and bad smell. THMs, when ingested can encourage the growth of free radicals that can destroy or damage vital cells in the body. Besides cancer, exposure to THMs has been linked to other health issues including asthma, eczema, heart disease and higher miscarriage and birth defect rates. Further, high level of chlorine also poses serious risk to the aging infrastructure.

Chemical free water disinfection technologies such as UV light and ozone have long been recognized to be much safer than chlorination, however, their high cost has prevented wider adoption. The basic mechanism of ozone generation and disinfection is shown in the picture. Ozone has a high oxidation potential (much higher than chlorine) and a superior response time compared to other sanitizing products. Its high oxidizing potential enables ozone to break down organic matters that chlorine cannot. Some pollutants can only be oxidized by ozone. For example, *Cryptosporidium Parvum*, a drinking water pollutant, is resistant to most disinfectants, but is effectively destroyed by ozone. Most importantly, the emission from ozone is pure oxygen and it leaves no residues.



UV light is a competing non-chemical sterilization technique. Intense UV rays break down the sensitive RNA and/or DNA of microorganisms, thus preventing the organism from reproducing. Ozone, on the other hand, oxidizes the microorganisms, thus destroying their cells completely. UV sterilization, being a line of sight process, to be effective, one needs to remove most of the suspended matter prior to the treatment. In contrast, ozone oxidizes the soil or particulate matter, changing or destroying the chemistry of the soiling materials such as organic compounds.

Despite the great benefits of ozone, its widespread adoption is limited due to the high total ownership cost of current commercial ozone generators. Somnio's Air<sub>2</sub>O<sub>3</sub><sup>TM</sup> ozone generator is a paradigm shift in ozone generation technology. The first and only commercial barrier less ozone generator eliminates the requirement of dielectric barriers and highly filtered dried oxygen (pure or enriched) supplies, which restrain current commercial ozone generators. This groundbreaking technology brings a market-competitive, robust, energy efficient, and scalable modular device that offers a financially attractive alternative with the capability of producing varying levels of ozone depending on the application at hand.

Producing ozone cost effectively is only part of the greater story of the far reaching benefits of ozone. Applying ozone effectively for a given application requires careful and intelligent design, sensing and monitoring. In addition to its revolutionary Air<sub>2</sub>O<sub>3</sub><sup>TM</sup> ozone generator, Somnio



collaborates with end users to provide complete and economical turnkey solutions. Somnio's current in-house test plant incorporates all necessary safety features and automation.

**Olszewski, Rosemarie (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, October 15, 2015 9:28 AM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: GOV00042 Lesniewski/Soneera Water  
**Attachments:** ODWMA 15 GOV00042F Lesniewski.pdf; ODWMA 15 GOV00042I Lesniewski.pdf

Please print.

---

**From:** Devereaux, Tracy Jo (DEQ)  
**Sent:** Thursday, October 15, 2015 9:27 AM  
**To:** Stoken, Laura (GOV)  
**Cc:** Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Pallone, Maggie (DEQ); Feuerstein, Heather (DEQ); Wurfel, Brad (DEQ); Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); DEQ-LogLetter  
**Subject:** GOV00042 Lesniewski/Soneera Water

Good morning Laura,

Attached is our staff's response to the constituent inquiry from John Lesniewski, case #S290545. Thanks.

Thanks,

*Tracy Jo*

Tracy Jo Devereaux, Management Assistant to  
Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
Constitution Hall, 4th Floor, South Tower, Pillar P8  
525 W. Allegan Street  
Lansing, Michigan 48933  
☎517-284-6544  
✉[devereauxt@michigan.gov](mailto:devereauxt@michigan.gov)

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, October 14, 2015 3:01 PM  
**To:** protectphiladelphia@gmail.com  
**Cc:** hcroft@cityofflint.com; Devereaux, Tracy Jo (DEQ); Krisztian, George (DEQ)  
**Subject:** Offer of Assistance for City of Flint

Mr. Lesniewski -

The Michigan Department of Environmental Quality, Office of Drinking Water and Municipal Assistance, was forwarded your e-mail by the Governor's Office for response.

We appreciate your concern and your offer to help. I recommend that you contact the City of Flint directly to discuss options that may be available to assist the city. I am sharing with you the following contact information for Mr. Howard Croft, Public Works Director, City of Flint. In addition, I'm cc'ing Mr. Croft on this note so that you will have that contact information as well.

**Howard Croft**  
Public Works Director  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502  
PH# 810.766.7135 Ext.2043

Again, thank you for your inquiry and offer of assistance.

*Liane J. Shekter Smith*  
Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

# Letter Buckslip

14-Oct-15

ID:	GOV00042	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ <input type="checkbox"/> Delogged
Date of letter:	10/8/2015	
Date received:	10/9/2015	
Date due:	10/20/2015	
Reply date:		
Last name:	Lesniewski	
First name:	John	
Organization:		
Subject:	Offer for his company, Soneera Water, to help the people of Flint with their water problems	
Reply to:		
Author:		
Owner:	SHALERK	

<u>Action</u>	<u>Action Date</u>	<u>Due Date</u>	<u>Entity</u>	<u>Signature</u>	<u>Owner</u>	<u>CCs</u>
Assigned 1	10/14/2015	10/20/2015	ODWM A	CHF	SHALERK	Thelen Sygo/Shaler Pallone/Feuerstein Wurfel Krisztian Shekter Smith

Comments: Original to ODWMA

GOV00042

**Shaler, Karen (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Friday, October 09, 2015 9:10 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Sygo, Jim (DEQ); Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: Action Item [Lesniewski] - Constituent Case Referral

I will assign as a GOV.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

**From:** Laura Stoken [<mailto:stokenl@michigan.gov>]  
**Sent:** Friday, October 09, 2015 8:25 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** Action Item [Lesniewski] - Constituent Case Referral

Hello -

Governor Snyder's office has received a constituent inquiry from John Lesniewski.

To help us track the correspondence, we've assigned this inquiry the unique reference number of S290545.

I would appreciate a copy of correspondence exchanged with this constituent on Governor Snyder's behalf, but I understand you may be limited by law in what you can share. Please let me know if you are unable to follow up with this constituent or if you believe I have made a mistake in referring this to your attention.

As always, please do not hesitate to contact me with any questions or concerns. Thank you for your assistance.

Laura Stoken  
Office of the Governor  
O: 517-335-7858

---

**CASE OPEN DATE: 10/8/2015 10:21 PM**

**NAME:** John Lesniewski  
**ADDRESS:** 35A Tohickon Valley Road  
**CITY/STATE/ZIP:** Ottsville, PA 18942  
**E-MAIL:** [protectphiladelphia@gmail.com](mailto:protectphiladelphia@gmail.com)  
**TELEPHONE:** 2676424759

**CONSTITUENT INQUIRY:** Governor,

I would like to share the resources of my company Soneera Water. Our website is [www.soneerawater.com](http://www.soneerawater.com)  
We would sincerely appreciate the chance to help the people of Flint with their water problems. Please  
have someone contact me by email at [protectphiladelphia@gmail.com](mailto:protectphiladelphia@gmail.com) or by telephone at (267) 642-4759.  
Please review the results of our technology at:  
<http://soneerawater.com/wp-content/uploads/2014/06/NATA-Results-Updated.pdf>

**Olszewski, Rosemarie (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, March 17, 2015 9:17 AM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** Fwd: Flint

Here's one of the things we talked about getting for Harvey.

Sent from my iPhone

Begin forwarded message:

**From:** "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov>  
**Date:** March 17, 2015 at 8:23:17 AM EDT  
**To:** "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov>, "Benzie, Richard (DEQ)" <BENZIER@michigan.gov>  
**Subject:** RE: Flint

The City has currently contracted with two main engineering consulting firms. The primary contact for each firm is listed below.

Warren Green with Lockwood, Andrews & Newman, Inc.  
630-918-2494  
and  
Marvin Gnagy with Veolia North America  
419-450-2931

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

-----Original Message-----

**From:** Wurfel, Brad (DEQ)  
**Sent:** Monday, March 16, 2015 4:44 PM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Flint

Hey, all. Harvey has a meeting with city residents Wednesday. Need that enforcement info ASAP, tomorrow at latest and sooner is better. Also, on the water filter issue, spoke with Wyant today and he much liked the idea of having a specific product recommendation come from one of the cities contractors.

Steve, can you please get contact information for the best contractor in Flint to address this?

Thank you!

Sent from my iPhone



Thelen, Mary Beth (DEQ)

---

From: Andrew Leavitt <ALEavitt@senate.michigan.gov>  
Sent: Wednesday, October 21, 2015 10:43 AM  
To: Muchmore, Dennis (GOV); Wyant, Dan (DEQ)  
Subject: 10.21.15-Ananich-Letter-LevinAppointment-FINAL.pdf  
Attachments: 10.21.15-Ananich-Letter-LevinAppointment-FINAL.pdf; ATT00001.txt

Good Morning Gentlemen,

Jim has placed a call to Senator Levin asking him if he would be interested in serving in some capacity on the Flint water review but they have not connected. To be fair to the Governor he wanted to make him aware that he would like Senator Levin to have a role in the process.

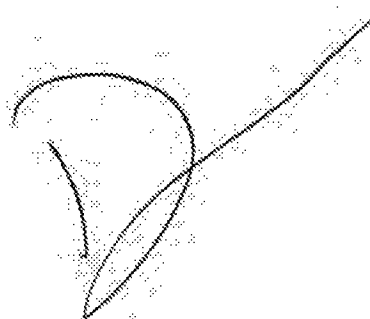
Thanks,

Andy

Orig: 3-1 MI Log File

cc: 2-1 Gov

cc: Director

A handwritten signature, possibly reading 'D. Wyant', is written in black ink. The signature is stylized with a large, sweeping 'D' and a long horizontal stroke extending to the right.

SENATE MINORITY LEADER  
**JIM ANANICH**

517.373.0412  
senjananich@senate.michigan.gov  
senatedems.com/ananich

 /jimananich  @jimananich

October 21, 2015

State of Michigan  
**Executive Office of the Governor**  
P.O. Box 30013  
Lansing, MI 48909

Governor Snyder,

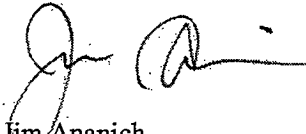
You have stated you have plans to formalize an investigation into the Flint water crisis using an outside group of experts. As we have discussed, we should take care to appoint an individual who is highly qualified to investigate.

To that end, I request that you appoint former Senator Carl Levin as chair of any panel you create. As you are surely aware, Sen. Levin served as the chair of the Permanent Subcommittee on Investigations during his tenure in the Senate, in addition to a number of other government oversight subcommittees.

Even now, Sen. Levin is sharing his passion for aggressive government oversight at Wayne State University, where he teaches students how to use investigatory tools to improve public policy, and serves as chair of the new Levin Center. I cannot think of an individual better suited to restoring trust in our state government.

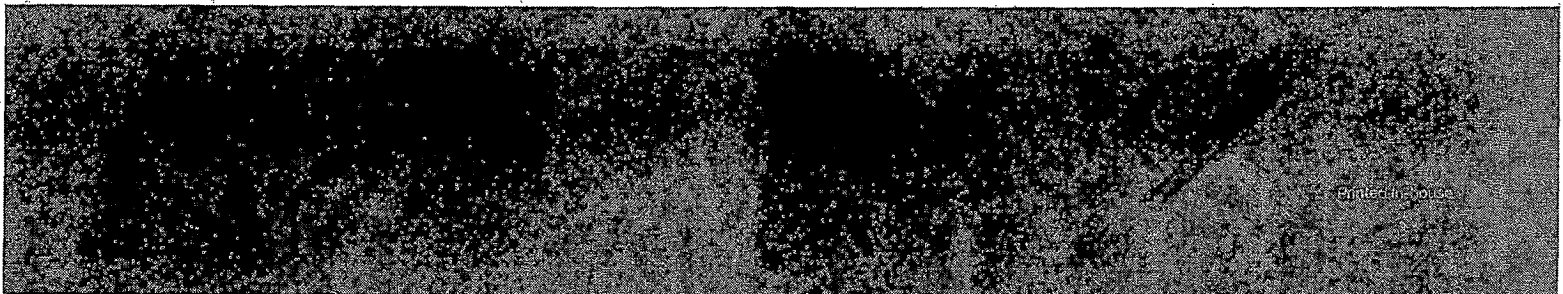
Please strongly consider my suggestion and help us take steps to ensure a thorough and accurate investigation.

Sincerely,



Jim Ananich  
Senate Democratic Leader  
District 27

cc:  
Dan Wyant, MDEQ ✓



Flint

**Thelen, Mary Beth (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, March 17, 2015 9:55 AM  
**To:** Hollins, Harvey (GOV)  
**Cc:** Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Thelen, Mary Beth (DEQ); Clayton, Stacie (GOV); 'Sygo, Jim (DEQ) (SygoJ@michigan.gov)'  
**Subject:** City of Flint Information - Consultants  
**Importance:** High

Good Morning Harvey,

The consultants listed below are working with Flint and are in the best position to recommend a water filter system. The locals should be asked to use their consultants to recommend a technology.

Warren Green with Lockwood, Andrews & Newman, Inc.  
630-918-2494

and

Marvin Gnagy with Veolia North America  
419-450-2931

Thank you.

Dan Wyant  
Director

---

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

## **Woosley, Rosemary (DEQ)**

---

**From:** Marc Edwards <edwardsm@vt.edu>  
**Sent:** Monday, October 19, 2015 12:33 PM  
**To:** DEQFOIA  
**Subject:** RE: FOIA Request

Marc Edwards  
1623 Jefferson Forest Lane  
Blacksburg, VA 24061

**From:** DEQFOIA [<mailto:DEQFOIA@michigan.gov>]  
**Sent:** Monday, October 19, 2015 10:28 AM  
**To:** Marc Edwards  
**Subject:** RE: FOIA Request

Can you please provide your complete mailing address for our database?

Thank you,

*Rose Woosley*  
OEA-EAC  
Department of Environmental Quality  
517-284-6890 / 800-662-9278  
Fax: 517-241-0858  
[Deqfoia@michigan.gov](mailto:Deqfoia@michigan.gov)

**From:** Marc Edwards [<mailto:edwardsm@vt.edu>]  
**Sent:** Saturday, October 17, 2015 4:18 PM  
**To:** DEQFOIA  
**Subject:** FOIA Request

Please send me all e-mails and documents associated with the drafting of a 3 page letter/ e-mail supposedly sent August 25, 2015 1:56 pm to Lee-Anne Walters by Liane Shekter Smith. The people responsible for drafting the letter are Tracy Devereaux, Steve Busch, Richard Benzie, Jim Sygo, Karen Shaler.

I'd like all e-mails, notes, drafts associated with creation of this document from the time Shekter Smith was ordered to send the letter to Ms. Walters on August 4th. This includes hand written meeting notes or anything associated with creation of this e-mail/letter.

I'd like all emails in which people were forwarded this document in draft or final form, and any communications between MDEQ and Harvey Hollins about the letter.

I would also like to get Steve Busch and Tracy Devereaux's copy of that letter. They are listed as recipients of the letter. Also, any e-mails or documents associated with this e-mail, letter, to the present day.

Marc

*\*10 DAY EXT. ISSUED*

**Woosley, Rosemary (DEQ)**

*0347-16*

**From:** Marc Edwards <edwardsm@vt.edu>  
**Sent:** Saturday, October 17, 2015 4:18 PM  
**To:** DEQFOIA  
**Subject:** FOIA Request

*RMD-EXEC*

*Lansing*

*Due: 11-9-15*

Please send me all e-mails and documents associated with the drafting of a 3 page letter/ e-mail supposedly sent August 25, 2015 1:56 pm to Lee-Anne Walters by Liane Shekter Smith. The people responsible for drafting the letter are Tracy Devereaux, Steve Busch, Richard Benzie, Jim Sygo, Karen Shaler.

I'd like all e-mails, notes, drafts associated with creation of this document from the time Shekter Smith was ordered to send the letter to Ms. Walters on August 4th. This includes hand written meeting notes or anything associated with creation of this e-mail/letter.

I'd like all emails in which people were forwarded this document in draft or final form, and any communications between MDEQ and Harvey Hollins about the letter.

I would also like to get Steve Busch and Tracy Devereaux's copy of that letter. They are listed as recipients of the letter. Also, any e-mails or documents associated with this e-mail, letter, to the present day.

Marc

**Olszewski, Rosemarie (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, March 19, 2015 11:07 AM  
**To:** Daugherty Johnson  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: RE: Flint Water Age map

Daugherty,

Based upon the most recent information provided to us from the city and your consultant, we are comfortable with either size transmission main (20-inch or 24-inch) for the transmission main project. An Act 399 permit (Permit No. W131020) issued March 18, 2013 (expired yesterday) included 23,550 LF of 24-inch WM, 1068 LF of 8-inch WM and 6800 LF of 8-inch WM. Given the reduced scope (lineal footage) of the project and expired permit...A new Act 399 permit seems more appropriate. Also, if the remaining work in the future (to complete the rest of the project) is completed under a separate contract, then, a separate Act 399 permits needs to be issued for that contract. A revised Act 399 permit application and set of plans (reduced scope) are needed. Assuming no changes in actual location of the proposed watermain and appurtenances, we should be able to expedite the review and issuance permit in a timely manner.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**From:** Daugherty Johnson [mailto:djohnson@cityofflint.com]  
**Sent:** Thursday, March 19, 2015 9:43 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** Fwd: RE: Flint Water Age map

Hello Mike. Here are the referenced exhibits in the 24 in. main reduction letter

Daugherty

----- Forwarded message -----

**From:** "Mack, Melissa" <MCMack@lan-inc.com>  
**Date:** Mar 19, 2015 9:34 AM  
**Subject:** RE: Flint Water Age map  
**To:** "Daugherty Johnson" <djohnson@cityofflint.com>  
**Cc:**

Hi Duffy,

Please see attached.

Melissa

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager



2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MCMack@lan-inc.com](mailto:MCMack@lan-inc.com)

**From:** Daugherty Johnson [<mailto:djohnson@cityofflint.com>]

**Sent:** Thursday, March 19, 2015 6:57 AM

**To:** Mack, Melissa

**Subject:** RE: Flint Water Age map

For clarification, I need the exhibits referenced in the letter you sent me discussing the downsizing of the 24 inch transmission main.

On Mar 19, 2015 7:55 AM, "Daugherty Johnson" <[djohnson@cityofflint.com](mailto:djohnson@cityofflint.com)> wrote:

Hello Melissa. Could you send the exhibits referenced in the letter. DEQ wants to see them.

Thanks  
Duffy

On Mar 15, 2015 5:26 PM, "Mack, Melissa" <[MCMack@lan-inc.com](mailto:MCMack@lan-inc.com)> wrote:

You should be able to print to any size. Try 11x17 portrait. I'm attaching again in case the file got corrupt when it was sent last time.

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager



2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MMack@lan-inc.com](mailto:MMack@lan-inc.com)

**From:** Daugherty Johnson [<mailto:djohnson@cityofflint.com>]  
**Sent:** Friday, March 13, 2015 1:46 PM  
**To:** Mack, Melissa  
**Subject:** RE: Flint Water Age map

I cannot print the map in its entirety. Do I need to scale a specific way?

On Mar 13, 2015 8:54 AM, "Mack, Melissa" <[MMack@lan-inc.com](mailto:MMack@lan-inc.com)> wrote:

Duffy,

As discussed here is the water age map from January showing the water sample locations.

Thanks,

Melissa

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager



2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MMack@lan-inc.com](mailto:MMack@lan-inc.com)



---

**From:** Mack, Melissa  
**Sent:** Thursday, March 12, 2015 1:12 PM  
**To:** Daugherty Johnson; Green, Warren; Matta, Samir  
**Subject:** Re: Flint Water Age map

Duffy,

We heard back from Innovyze. The model file got corrupted, but they are walking us through a fix. We are documenting the process so we'll know what to do if it happens in the future.

We expect to have fixed this afternoon and have the maps to you thereafter.

Thank you,

Melissa

Sent from my iPhone

On Mar 11, 2015, at 5:04 PM, Mack, Melissa <[MMack@lan-inc.com](mailto:MMack@lan-inc.com)> wrote:

Duffy,

We ran into a technical issue with the model creating the water age maps without the 24-inch highlighted. We have to send the model to Innovyze. They weren't able to help us over the phone. We will get you the maps as soon as possible.

Thanks,

Melissa

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager

<image001.gif>

2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MMack@lan-inc.com](mailto:MMack@lan-inc.com)

**From:** Daugherty Johnson [<mailto:djohnson@cityofflint.com>]

**Sent:** Wednesday, March 11, 2015 9:07 AM

**To:** Mack, Melissa; Green, Warren; Matta, Samir

**Subject:** Flint Water Age map

Hello Melissa. Would you please send me a copy of the latest Water Age map for Flint.

Thanks

Duffy

**Thelen, Mary Beth (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, October 06, 2015 7:58 AM  
**To:** Hedman, Susan  
**Cc:** Burke, Thomas; Grevatt, Peter; Hyde, Tinka; Thelen, Mary Beth (DEQ); Krisztian, George (DEQ)  
**Subject:** RE: Flint - US EPA Technical Assistance  
**Importance:** High

Good Morning:

The call in number for the 9:30 EST conference call will be as follows:

PPI

Access Code: PPI

Dan Wyant will have the host number

Also, the following will be on the call from the MDEQ:

Director Dan Wyant

Chief Deputy Director Jim Sygo

George Krisztian, Laboratory Director

Liane Shekter Smith, Chief, Office of Drinking Water and Municipal Assistance

Thank you!

Mary Beth

Mary Beth Thelen

Management Assistant to Director Dan Wyant Department of Environmental Quality Constitution Hall,  
6th Floor South

Phone: 517-284-6712 or 284-6700 (new numbers)

Fax: 517-241-7401

[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

-----Original Message-----

From: Hedman, Susan [<mailto:hedman.susan@epa.gov>]

Sent: Monday, October 05, 2015 9:00 PM

To: Thelen, Mary Beth (DEQ)

Cc: Burke, Thomas; Grevatt, Peter; Hyde, Tinka

Subject: Flint - US EPA Technical Assistance

Hi MaryBeth --

Dan Wyant has asked USEPA to do a technical assistance call tomorrow morning with George Krisztian -- and he also volunteered you to set up the call. We (the three people cc'd and myself) are available to talk tomorrow at 9:30 eastern. Would you please provide call-in info to all of us?

Thanks very much,

Susan

Sent from my iPhone

**Olszewski, Rosemarie (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Tuesday, March 10, 2015 9:53 AM  
**To:** Michael Glasgow  
**Subject:** RE: City of Flint Water Plant Monitoring Results

Got it, thanks Mike.

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Tuesday, March 10, 2015 9:51 AM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** City of Flint Water Plant Monitoring Results

Adam,

Good morning, here are the results of our February monthly bromate monitoring, and our first quarter radiological testing.

Mike Glasgow  
City of Flint Water Plant



## Public health emergency declared due to lead in Flint water

Advisory: Don't drink water unless it goes through approved filter

Published On: 4 m Updated 3 m



### FLINT, Mich. -

Genesee County commissioners have declared a public health emergency for residents using water from the Flint River through the city's water system.

Tests have shown children with elevated levels of lead, months after Flint began drawing and treating water from the river. The water is aggravating lead in old pipes in thousands of homes.

Commissioners issued an advisory Thursday recommending that people not drink the water unless tests show lead levels are down or the water has gone through an approved filter.

The General Motors Foundation, the local United Way and others have given at least \$105,000 to buy filters. Donations and grant funds will purchase 5,250 water filters for Flint residents. GM Foundation Donates \$50,000 to Purchase Water Filters in Flint.

"I encourage the public to follow the guidance in the declaration to use a certified filter, have water testing done, and flush cold water for five minutes before drinking," said Flint Mayor Dayne Walling in a news release.

Gov. Rick Snyder has pledged to announce some type of action by the end of the week. He says the consequences of using the river weren't "fully understood."



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**Olszewski, Rosemarie (DEQ)**

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, March 17, 2015 9:44 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** Re: Flint

Yes. Please. With note:

Harvey, the attached consultants are working with Flint and are in the best position to recommend a water filter system. The locals should be asked to use their consultants to recommend a technology.

Dan Wyant

On Mar 17, 2015, at 9:30 AM, Thelen, Mary Beth (DEQ) <[THELENM2@michigan.gov](mailto:THELENM2@michigan.gov)> wrote:

Dan,  
Do you want me to send this info to Harvey? Please advise. Thanks.

Mary Beth

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, March 17, 2015 9:17 AM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** Fwd: Flint

Here's one of the things we talked about getting for Harvey.

Sent from my iPhone

Begin forwarded message:

**From:** "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)>  
**Date:** March 17, 2015 at 8:23:17 AM EDT  
**To:** "Wurfel, Brad (DEQ)" <[WurfelB@michigan.gov](mailto:WurfelB@michigan.gov)>, "Shekter Smith, Liane (DEQ)" <[SHEKTERL@michigan.gov](mailto:SHEKTERL@michigan.gov)>, "Benzie, Richard (DEQ)" <[BENZIER@michigan.gov](mailto:BENZIER@michigan.gov)>  
**Subject:** RE: Flint

The City has currently contracted with two main engineering consulting firms. The primary contact for each firm is listed below.

Warren Green with Lockwood, Andrews & Newman, Inc.  
630-918-2494  
and  
Marvin Gnagy with Veolia North America  
419-450-2931



Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

-----Original Message-----

From: Wurfel, Brad (DEQ)  
Sent: Monday, March 16, 2015 4:44 PM  
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
Subject: Flint

Hey, all. Harvey has a meeting with city residents Wednesday. Need that enforcement info ASAP, tomorrow at latest and sooner is better. Also, on the water filter issue, spoke with Wyant today and he much liked the idea of having a specific product recommendation come from one of the cities contractors.

Steve, can you please get contact information for the best contractor in Flint to address this?

Thank you!

Sent from my iPhone

**Thelen, Mary Beth (DEQ)**

---

**From:** Hazan, Stan <Hazan@nsf.org>  
**Sent:** Friday, October 16, 2015 1:29 PM  
**To:** Wyant, Dan (DEQ)  
**Subject:** Fwd: EPA Establishes Safe Drinking Water Task Force to Provide Expertise to MDEQ and City of Flint

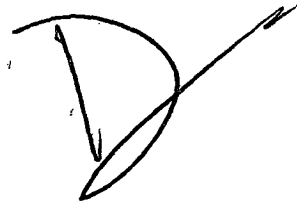
Hi Dan

I was wondering if DEQ needed any assistance from NSF or if NSF could serve on the Task Group.

Thanks

Stan

Sent from my Verizon Wireless 4G LTE Smartphone



-----  
**From:** Josh Singer <[noreply-subscriptions@epa.gov](mailto:noreply-subscriptions@epa.gov)>  
**Date:** October 16, 2015 at 12:14:35 PM EDT  
**To:** <[hchase@nsf.org](mailto:hchase@nsf.org)>  
**Subject:** EPA Establishes Safe Drinking Water Task Force to Provide Expertise to MDEQ and City of Flint

Contact Information: Anne Rowan, [rowan.anne@epa.gov](mailto:rowan.anne@epa.gov) 312-353-9391

For Immediate Release      No. 15-OPA160

**EPA Establishes Safe Drinking Water Task Force to Provide Technical Expertise to MDEQ and City of Flint**

**Task Force providing technical assistance on reconnecting the Flint drinking water system to a new source**

CHICAGO (October 16, 2015) - Today U.S. Environmental Protection Agency Region 5 Administrator Susan Hedman established the Flint Safe Drinking Water Task Force to provide the Agency's technical expertise through regular conversations with designated officials from Michigan Department of Environmental Quality (MDEQ) and the City of Flint. The Task Force will be led by the Region 5 Deputy Regional Administrator and will assist with developing and implementing a plan to secure water quality, including measures to optimize corrosion control. Task Force members will be available to consult with MDEQ and the City of Flint on site in Flint. The Task Force will also coordinate as necessary with federal, state and local public health agencies to assist with protection of public health.

Specifically, the Task Force will provide technical assistance to the MDEQ and the City of Flint to reconnect the Flint system to a new source of drinking water (to be supplied by the Great Lakes Water Authority) and to optimize corrosion control for the Flint system, starting in October 2015. The Task Force will also provide technical assistance to the MDEQ and the City of Flint, as needed, in advance of and following connection of the Flint water system to a new source of drinking water (to be supplied by the Karegnondi Water Authority) and to optimize corrosion control for the Flint system, starting in 2016.

"EPA is committed to working with our state and local partners to ensure a safe and reliable drinking water supply for the residents of Flint, Michigan," Hedman said. "The formation of this task force continues our commitment to providing technical assistance to the City of Flint and the State of Michigan."

The Task Force will be comprised of scientists and technical experts from the EPA Region 5 office in Chicago, the National Risk Management Research Lab in Cincinnati and the EPA drinking water program. In addition, EPA will ask the Governor to designate a MDEQ official and the Mayor of Flint to designate a city official, to serve as points of contact for the Task Force.

If you would rather not receive future communications from Environmental Protection Agency, let us know by clicking [here](#).  
Environmental Protection Agency, 77 West Jackson Boulevard, Chicago, IL 60604-3507 United States

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Flint

**Thelen, Mary Beth (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, March 17, 2015 11:39 AM  
**To:** Hollins, Harvey (GOV); Clayton, Stacie (GOV)  
**Cc:** Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ)  
**Subject:** SDWA Violations - Flint

**Importance:** High

Dear Harvey,

Director Dan Wyant asked that I send you the following information regarding Flint.

As requested, the following information has been gleaned from our database regarding violations:

In calendar years 2013 and 2014, we've identified 1100 violations (200 are standards violations, i.e., MCLs; and 910 other violations).

This represents 326 community water supplies that had violations over these two years.

Flint has 5 violations in those 2 years (TTHM MCLs at 2 sites and 2 bacti MCLs (1 with E. coli that counts as an additional violation)).

Please let us know if you need anything further. Thank you.

Mary Beth

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, October 01, 2015 3:40 PM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Statement from Rep. Phelps on his denied FOIA requests pertaining to the City of Flint water crisis  
**Attachments:** 6422 - EXEC, ODWMA, WRD + Lansing - due: 9/15/15; 6422.pdf

Please print all.

---

**From:** Shaler, Karen (DEQ)  
**Sent:** Thursday, October 01, 2015 3:10 PM  
**To:** Sygo, Jim (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)  
**Subject:** RE: Statement from Rep. Phelps on his denied FOIA requests pertaining to the City of Flint water crisis

FYI, yesterday ODWMA e-mailed to Rep. Phelps the three documents from the attached e-mail that Steve Busch said are responsive to this FOIA request. The Executive Division did not have any responsive records as he requested documents regarding "waivers, permits or applications to use the Flint River as a source of water and/or drinking water for the City of Flint...." I've also attached his FOIA request. Note that ODWMA's documents were provided at no charge, so today I placed in the U.S. Mail Rep. Phelps's voided \$50 good faith deposit personal check, which Maggie is aware of.

---

**From:** Pallone, Maggie (DEQ)  
**Sent:** Thursday, October 01, 2015 2:56 PM  
**To:** Shaler, Karen (DEQ); Sygo, Jim (DEQ)  
**Subject:** FW: Statement from Rep. Phelps on his denied FOIA requests pertaining to the City of Flint water crisis

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Thursday, October 1, 2015 2:54 PM  
**To:** Pallone, Maggie (DEQ) <[PalloneM@michigan.gov](mailto:PalloneM@michigan.gov)>  
**Subject:** Fwd: Statement from Rep. Phelps on his denied FOIA requests pertaining to the City of Flint water crisis

Sent from my iPhone

Begin forwarded message:

**From:** "Eggert, David" <[DEggert@ap.org](mailto:DEggert@ap.org)>  
**Date:** October 1, 2015 at 2:47:11 PM EDT  
**To:** Brad Wurfel <[WurfelB@michigan.gov](mailto:WurfelB@michigan.gov)>  
**Subject:** Fwd: Statement from Rep. Phelps on his denied FOIA requests pertaining to the City of Flint water crisis

Sent from my iPhone

Begin forwarded message:

**From:** Rosemary Jones <[RJones@house.mi.gov](mailto:RJones@house.mi.gov)>  
**Date:** October 1, 2015 at 2:42:16 PM EDT  
**To:** Rosemary Jones <[RJones@house.mi.gov](mailto:RJones@house.mi.gov)>  
**Subject:** Statement from Rep. Phelps on his denied FOIA requests pertaining to the City of Flint water crisis

**FOR IMMEDIATE RELEASE:**  
**Thursday, Oct. 1, 2015**

**Contact: Rep. Phil Phelps**  
**Phone: (517) 373-7515**

***Statement from state Rep. Phil Phelps (D-Flushing) on his FOIA requests pertaining to the City of Flint water crisis being denied:***

“Residents of the City of Flint face a substantial health risk due to contaminants found in their drinking water. In an effort to not politicize this situation, I have been working directly with state and local officials in seeking important information and attempting to correct the City’s water crisis. Unfortunately, I have been faced with continual road blocks in my requests for information. It has been nearly a month since I submitted Freedom of Information Act (FOIA) requests to the State and the City of Flint requesting to see documents related to the City’s switch to using water from the Flint River. I requested the applications and permits required by law to change a city’s source of water. So far, the State Treasury has violated FOIA by not providing any information or even a denial. The Department of Environmental Quality (DEQ) and City of Flint have denied my request saying that the documents I requested do not exist. However, state law requires Michigan cities to apply for a permit from the DEQ to switch their source of water. Violation of this law is punishable by a fine of \$5,000 per day and possible incarceration. I find it hard to believe that the DEQ and the City of Flint ignored such a critical step, not to mention one that the cost in fines alone would already be roughly \$2.5 million and cause those responsible to be subject to criminal prosecution.

“My request for these documents was meant to be a fact-finding mission to ascertain the degree to which the State knew about or took any action to determine the potential hazards of making this switch prior to being officially ordered by the State-appointed Emergency Manager. Since the State has decided not to disclose this information to me, it is unclear the extent to which the State is culpable. I believe the bottom line here is that the decision to switch the source of Flint’s water to the Flint River was made by the Emergency Manager appointed by Governor Snyder and the burden is on his shoulders to make this right.

“The use of the river water has caused a great amount of destruction to the City’s water infrastructure, and it has put the residents who use the water in harm’s way. To help continue this fight for information, I have retained attorney Keith D. Flynn of the law firm Miller Cohen P.L.C. to further evaluate my legal options.

My position and recommendation to the Governor on this issue is that the State should immediately switch Flint's water source back to the Detroit Water System at no additional cost to Flint residents and supply water filters to every household in Flint.

"Furthermore, the State should begin to estimate costs for the total damage done to the City's public works infrastructure and for the treatment of potential adverse health outcomes we could see in Flint residents in the future and allocate expenditures to correct this problem."

---

Rosie Jones  
Deputy Press Secretary  
Michigan House Democrats  
O: 517.373.3731  
C: PPI  
[housedems.com](http://housedems.com)

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[IP\_US\_DISC]

msk dccc60c6d2c3a6438f0cf467d9a4938

**Olszewski, Rosemarie (DEQ)**

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**From:** Devereaux, Tracy Jo (DEQ)  
**Sent:** Thursday, September 24, 2015 5:01 PM  
**To:** Shaler, Karen (DEQ); DEQFOIA  
**Cc:** DEQ-RMD-FOIA  
**Subject:** 6422 - EXEC, ODWMA, WRD + Lansing - due: 9/15/15  
**Attachments:** 02310\_Flint\_BaselineForm.pdf; ATT00001.htm; BaselineLetterSW - 03 14 07.pdf; ATT00002.htm; BaselineQA - 03 12 07.pdf; ATT00003.htm

Attached are all the documents ODWMA has pertaining to the subject line FOIA request. Our understanding is that the documents are to be reviewed in Executive Division before going anywhere else.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, September 24, 2015 4:58 PM  
**To:** Devereaux, Tracy Jo (DEQ)  
**Subject:** Fwd: Flint Baseline Info

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

Sent from my iPhone

Begin forwarded message:

**From:** "Philip, Kris (DEQ)" <[PHILIPK@michigan.gov](mailto:PHILIPK@michigan.gov)>  
**Date:** September 23, 2015 at 10:24:15 AM EDT  
**To:** "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)>  
**Cc:** "Rennaker, Joanne (DEQ)" <[RENNAKERJ@michigan.gov](mailto:RENNAKERJ@michigan.gov)>  
**Subject:** Flint Baseline Info





COMPLETE AND RETURN THIS FORM TO THE MDEQ BY APRIL 1, 2007.

Listed below is the sum of the rated capacity of all low service or intake pumps the MDEQ has on record capable of withdrawing water from a surface water source as of May 29, 2006. If the capacity is correct, check the box provided. If the total capacity is incorrect, put the correct capacity in the blank to the right of the listed capacity. Finally, complete the signature box and return the form to the MDEQ. Thank you for your cooperation.

WSSN: 02310 FLINT

Check this box if the total capacity listed below is correct.

If the data is incorrect, leave this box blank and make the necessary correction below.



	Capacity on Record	Capacity Correction
Total low service or intake pump capacity:	90 MGD	

Signature of water supply representative:

BRENT F. WRIGHT  
Printed Name

OPS & TECH SUPERVISOR  
Title

Signature

3-22-07  
Date

Please FAX or mail your  
completed form to:

MDEQ, Water Bureau  
Community Drinking Water Unit  
PO Box 30273  
Lansing, MI 48909-7773

FAX: (517) 241 - 1328



JENNIFER M. GRANHOLM  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



STEVEN E. CHESTER  
DIRECTOR

March 13, 2007

Dear Water Supply Professional:

**SUBJECT: Confirmation of "Baseline Capacity" for Surface Water Sources  
RESPONSE REQUIRED BY APRIL 1, 2007**

This correspondence has been sent to confirm the "baseline capacity" of your surface water source(s). Baseline capacity is a critical component of new laws regulating water withdrawals passed by the Michigan legislature in February 2006. The enclosed "Question and Answer" (Q&A) document further explains this new legislation, its impact on you, and why responding to this letter is to your advantage.

To assign a baseline capacity for community water supplies, the MDEQ must establish the design withdrawal capacity as of May 29, 2006. For surface water sources, the design withdrawal capacity is the sum or total capacity of all pumps capable of withdrawing water from a surface water source. This capacity is the sum of the rated or design capacity of your low service or intake pumps without regard to hydraulic limitations or pump inefficiencies.

Enclosed please find a report on the sum or total rated capacity of your low service or intake pumps currently on record at the MDEQ. Please review this capacity, indicate your agreement or provide necessary corrections, and **return the signed form to the MDEQ by April 1, 2007.** A single response is all that is necessary, so you may wish to consult with your water system staff before returning your reply.

There is no scenario under the new legislation where confirming your baseline capacity will not be to your advantage. In fact, failure to do so may result in the MDEQ using annual pumpage data instead of available withdrawal capacity to determine your baseline. This default approach will result in a lower baseline capacity being established for your system.

In closing, the MDEQ wants to ensure the low service or intake pump capacity data it has on record is accurate and appropriate for establishing your baseline capacity from surface water source(s). If you have specific questions about the capacity listed on the enclosed report, please contact your district engineer. If you have questions regarding the new water withdrawal legislation, please read the enclosed Q&A document where you will find additional resources and contact information. Thank you for your cooperation.

Sincerely,

James K. Cleland, P.E., Chief  
Lansing Operations Division  
Water Bureau

Enclosures

cc: Operator in Charge

## **Questions and Answers Regarding New Water Withdrawal Legislation & Baseline Capacity**

### **What is the purpose of the new water withdrawal legislation and why do we need to establish baseline capacity?**

The new laws governing large quantity water withdrawals expanded upon water use and reporting requirements for large quantity water users to further assist in management of Michigan's water resources. The laws amended Parts 327 and 328 of the Natural Resources and Environmental Protection Act, and the Safe Drinking Water Act. The amendments redefined the requirements for water use registration and reporting, established environmental standards for assessment of new or increased large quantity water withdrawals, and set in place permit requirements for new large quantity water withdrawals of over 2 million gallons per day for ground water or inland surface water sources and 5 million gallons per day for surface water sources drawing from the Great Lakes or connecting waters.

### **What is a Large Quantity Withdrawal?**

A large quantity withdrawal is defined as 1 or more cumulative total withdrawals of over 100,000 gallons per day (gpd) as an average in any 30-day period supplying a common distribution system, an amount approximately equal to new or additional capacity of 70 gallons per minute (gpm).

### **What is Baseline Capacity?**

Baseline capacity is defined as the withdrawal capacity reported to the MDEQ by the person making a large quantity water withdrawal in the April 1, 2007 annual report of water use. For public water supplies the baseline capacity is the total designed withdrawal capacity as approved by the MDEQ under the Michigan Safe Drinking Water Act. For groundwater systems, the approved withdrawal capacity of your well(s) is the rated capacity of the well pump(s), not the capacity at which the pump(s) may be operating due to well inefficiencies. This capacity may include standby wells equipped with pumps that are maintained for emergency use. For surface water systems, the approved withdrawal capacity is the rated capacities of low service or intake pumps regardless of hydraulic limitations or pump inefficiencies. Only pumping equipment in place and operational within 90 days of the effective date of the legislation, which was February 28, 2006, can be included in the baseline capacity. If the above referenced capacity information is not reported and is otherwise unavailable, baseline capacity defaults to the maximum reported water use reported to the MDEQ for the years 2002 to 2005.

### **Why is establishing a baseline capacity important to you?**

Under the new legislation, all new or increased "large quantity withdrawals" will be subject to evaluation under the new environmental standards. By legislative mandate, a new or increased large quantity withdrawal references a system's baseline capacity, or the existing capacity of the large quantity water user as a point of reference. All existing large quantity withdrawals that can be documented by the April 1, 2007 deadline for reporting are "grandfathered."

(continued on reverse)

**How might an inaccurate or no baseline capacity affect your public water supply?**

The answer to this question is best exemplified by citing a hypothetical example.

Suppose a water supply system (not necessarily a public water supply) is operating with an average water use of 1.2 million gallons per day (MGD) and a peak water use reported to the department in 2004 of 1.6 MGD. However, the sum of capacities for the system's well pumps is 1800 gpm, or 2.6 MGD. Unfortunately, the system fails to notify the MDEQ of their existing well pump capacity. Under the law, 1.6 MGD becomes the grandfathered baseline capacity instead of 2.6 MGD.

Subsequently, the system increases their water use and later reports a water use to the MDEQ of 1.8 MGD, or a 200,000 gpd increase. The system is now subject to application of the new environmental standards adopted in passage of the legislation. Had they reported their baseline capacity, an increase in use of up to 1.0 MGD would have been exempt from application of the new environmental standards.

To give another example, a system using surface water has a peak daily demand reported on June 30, 2004 of 22 MGD. At the water treatment plant, there are 4 low service pumps that may be used to withdraw water from their source. Two of the pumps are rated at 10 MGD. The other 2 pumps have variable frequency motors. One of these pumps can produce up to 10 MGD; the other up to 5 MGD. If the system fails to notify the MDEQ that the total capacity of their low service pumps is 35 MGD, their grandfathered baseline capacity will become 22 MGD. As in the previous example, this system is now subject to the application of the new environmental standards should their water use increase more than 100,000 gpd beyond the 2004 peak demand.

**Where can I obtain additional information on the new water use legislation?**

Additional information about the new water use and water withdrawal legislation is available on the MDEQ website at <http://www.michigan.gov/deqwateruse>.

Specific questions or comments regarding the new legislation should be directed to: Brant Fisher at 517-241-1415 or [fisherb@michigan.gov](mailto:fisherb@michigan.gov) or Ronda Page at 517-241-1380 or [pagerc@michigan.gov](mailto:pagerc@michigan.gov).

Questions specific to your water supply well capacities should be directed to your MDEQ district office.

FOIA Coordinator  
Department of Environmental Quality  
P.O. Box 30457  
Lansing, MI 48909-7957  
Phone: 800-662-9278

[deqfoia@michigan.gov](mailto:deqfoia@michigan.gov)

6422-15  
Exec, WRD  
ODWMA  
LDO  
due 9-29-15

10-day

Dear FOIA coordinator,

This letter is a request for records under the Freedom of Information Act, MCL 15.231 et seq.

The records I am requesting are:

1. All documents the Michigan Department of Environmental Quality, or its agents, has in its possession, including correspondence, related to any waivers, permits or applications to use the Flint River as a source for water and/or drinking water for the City of Flint or any other municipality or municipal entity.
2. All documents the Michigan Department of Environmental Quality, or its agents, has in its possession, including correspondence, related to any communications between the Michigan Department of Environmental Quality, or its agents, and the Michigan Department of Treasury, or its agents, regarding any waivers, permits or applications to use the Flint River as a source for water and/or drinking water for the City of Flint or any other municipality or municipal entity.
3. All documents the Michigan Department of Environmental Quality has in its possession, including correspondence, related to any communications between the Michigan Department of Environmental Quality, or its agents, and the Office of the Governor of the State of Michigan, or its agents, regarding any waivers, permits or applications to use the Flint River as a source for water and/or drinking water for the City of Flint or any other municipality or municipal entity.

I am enclosing a check in the amount of \$50 as a good faith deposit to cover a portion or all of the cost of these items. If the amount exceeds \$50, please contact me by phone at 810-223-7034, to discuss the balance and the basis for the amounts charged beyond \$50. If the amount is less than \$50 please refund the balance to this office.

Sincerely,

Phil Phelps  
819 Main Street  
Unit A  
Flushing, MI 48433

## DEQFOIA

---

**From:** Phillip Phelps <pphelps277@yahoo.com>  
**Sent:** Friday, September 04, 2015 4:53 PM  
**To:** DEQFOIA  
**Subject:** FOIA Request  
**Attachments:** Phelps Mich Dept EQ FOIA Request Sept 4 2015.doc

Hello,  
Please find the attached FOIA request. If you have any questions please feel free to contact me through the contact information provided in the attached FOIA request.

Thanks,  
Phil

**Thelen, Mary Beth (DEQ)**

---

**From:** Krisztian, George (DEQ)  
**Sent:** Saturday, October 17, 2015 12:12 PM  
**To:** Sygo, Jim (DEQ); Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** FW: Letter of Request for Inspection and Testing  
**Attachments:** Request for State Inspection.PDF

For your records.

George L. Krisztian  
Flint Action Plan Coordinator  
Laboratory Director  
Michigan Department of Environmental Quality  
Desk ph (517) 284-6719  
Cell ph PPI

OK

D

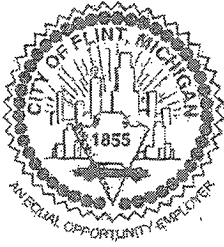
**From:** Sean Kammer [<mailto:skammer@cityofflint.com>]  
**Sent:** Friday, October 16, 2015 9:07 AM  
**To:** Krisztian, George (DEQ); Poke, Irvin (LARA); Edgerton, Shelly (LARA)  
**Cc:** Natasha Henderson  
**Subject:** Letter of Request for Inspection and Testing

All,

Please see attached- a letter of request for inspection of plumbing and water testing from the Flint City Administrator.

Thank you.

Sean Kenneth Kammer, MPA  
Assistant to the City Administrator  
City of Flint, Michigan  
1101 S. Saginaw St.  
Flint, MI 48502  
810-237-2025



## CITY OF FLINT

**Dayne Walling**  
Mayor

**Natasha L. Henderson**  
City Administrator

Thursday, October 15, 2015

Michigan Department of Licensing and Regulatory Affairs  
Attn: George Krisztian  
P.O. Box 30004  
Lansing, MI 48909

To whom it may concern,

The City Administrator, on behalf of the City of Flint, requests that plumbing inspections be conducted by the Michigan Department of Licensing and Regulatory Affairs and water testing be performed by the Michigan Department of Environmental Quality for the Flint School buildings in order to verify the safety of the public health in the City as it relates to water quality.

Thank you,

Natasha L. Henderson, City Administrator



**Thelen, Mary Beth (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, March 06, 2015 9:00 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Tap Filters

Sorry, should have copied you.

b

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Thursday, March 05, 2015 4:26 PM  
**To:** Hollins, Harvey (GOV); 'Wyant, Dan (WyantD@michigan.gov)'; Agen, Jarrod (GOV)  
**Cc:** Baird, Richard (GOV); 'Wurfel, Sara (GOV) (Wurfels@michigan.gov)'  
**Subject:** FW: Tap Filters

Harvey,

Since group call Tuesday I have been working out how the filter idea might take shape.

To reiterate some key points so we're all clear:

1. DEQ does not inspect individuals' homes in a situation like this. It's the city's system, their operators handle all complaints and maintenance. In fact, our folks alerted me that the city's got union rules in place forbidding any contractor from touching the system.
2. DEQ's role is limited to ensuring the plant is operating to state standards and the water it produces meets potability standards. The aesthetic issues drawing concern from residents – color, odor, taste – stem from a variety of things. Age of the system and prolonged lack of upkeep is the leading factor. But in some areas, another contributing factor is changes in water flow – source used to come from the south, now comes from the north, so some pipes are flowing in reverse, stirring up whatever was settled for a long time. In some sections, large pipes that historically served large communities are now serving a much smaller customer base, contributing to water stagnating in the system. In some areas, household connections are old and worn, so two neighbors may be having dramatically different experiences. My point is, the challenge takes many forms and there's no single solution that will bring sweeping change. The two consultants hired by the city have, as I understand it, both reinforced this idea in their assessments, so that's good.
3. The fix for this will be years in the making, truly. Even if full funding were available, 'big dig' projects can't all happen at once. The city needs to get an assessment of its infrastructure so it can prioritize its needs, and I understand they're working on that. In the near term, maintenance this spring / summer – things like cleaning the pipes in key sections and flushing the system via the hydrants – could offer some short term results. I know nobody wants to just wait for spring, but that is something important to keep in mind.
4. In the meantime, the group discussed possibly making home water filters available somehow. The National Safety Foundation is a Michigan company, headquartered and founded in Ann Arbor, that develops standards for all kinds of infrastructure. They're a globally recognized source for standard setting. A look at their site reveals there are myriad filtration options on the market and within each type (faucet mounted, whole house line filters, etc) there are filters that focus on different aspects of purification.

If this idea begins to get legs, I'd suggest testing some different models on the local water at the customer level to see if they work. I'd also suggest the idea be focused on tap-mounted models to promote clean, appealing drinking water. And I'd suggest this program could be funded in whole or in part by the state, but would need to be administered by the city (reinforcing the fact that they own, operate and service the system). I've got some information on filter models below.

Two more considerations: One, while the state has provided residents in some communities with bottled water in the past, it always has to do with their water being somehow contaminated – as in, some kind of chemical plume that impaired local drinking water sources. This would be the first time the state took steps to deal with what is an aesthetic issue on a system where the water is meeting state drinking water standards.

#### Water filter info:

ANSI NSF Standard 42 Covers bacteriostasis, taste and odor (associated only with chlorine removal), and other aesthetic conditions

[http://standards.nsf.org/apps/group\\_public/download.php/19895/NSF\\_42-11%20-%20watermarked.pdf](http://standards.nsf.org/apps/group_public/download.php/19895/NSF_42-11%20-%20watermarked.pdf)

ANSI NSF Standard 53 Covers health effects removal

[http://standards.nsf.org/apps/group\\_public/download.php/19896/NSF\\_53-11a%20-%20watermarked.pdf](http://standards.nsf.org/apps/group_public/download.php/19896/NSF_53-11a%20-%20watermarked.pdf)

It is important to note that the filters are not required to meet all aspects of the standard, only the portions they want to make claims for. So product information for each filter must be reviewed to determine its applicability.

Most of these point of use filters are basic activated carbon filters that simply remove taste and odor specifically associated with chlorine, not other things like iron, manganese, hydrogen sulfide, etc. that can also impact taste and odor as well as color.

It is important to recognize that taste and odor is generally an individual preference and such standards have for the most part not been developed because groups of individuals may still consider taste and odor issues to exist even after levels for such a standard have been met.

Other considerations are that the test water for such filters attempting to meet the standard uses hardness levels of 170 mg/L or less. Flint's water at times may be above this level, which could then impact filter performance and longevity.

Most of these filters are designed to be replaced after 100 gallons or less of use, a period of about 3 months for most households. In addition the tests allow for initial pressure drops of up to 15 psi. This may limit use in households that already rely on minimum pressure within their household plumbing.

Regarding the health effects standards, as the Flint water system already meets such requirements, with the exception of the current TTHM locational running annual average, there is little point to the use of these filters for such a purpose.

To the point you'd asked about the other day, while Flint and Detroit are leading examples of unmaintained infrastructure, Flint is not alone by any means.

This recent infrastructure report card

<http://www.infrastructurereportcard.org/michigan/michigan-overview/>

Lists Michigan with a \$13.8 Billion need over the next 20 years.

<http://www.infrastructurereportcard.org/a/#p/state-facts/michigan>

Here's a link to the 2009 Report Card for Michigan Infrastructure  
<http://www.michiganreportcard.com/>

From the report:

"A significant portion of the state's primary distribution system is nearing 100 years old. CWS are facing a significant challenge to maintain the vast network of aging, underground infrastructure. Within the city of Detroit alone, approximately 80% of its distribution piping was installed prior to 1940, which is not unusual for CWS in Michigan."

"The age of the majority of the state's distribution system is the primary contributor to normal decay and failure. In many cases, pipe life has far exceeded useful service life. Much of the older water systems consist of undersized mains constructed of materials such as unlined cast iron pipe. Minor fluctuations in system flows or pressure may cause red water complaints and even result in pipe failure. All CWS should have routine flushing and valve maintenance programs; however many are hesitant due to the time and cost."

"Under the Stage 2 Disinfection Byproducts Rule, all CWS that disinfect are required to provide increased trihalomethane (THM) and haloacetic acid (HAA5) monitoring due to the potential byproducts of chlorine reactions within the pipe system. Corrosion, scale, solid suspension on the interior sidewall of pipe, in addition to the age and condition of the system will require diligent rehabilitation investment to maintain system integrity."

"While better materials and advanced technology is available to replace the aging distribution system, resources remain scarce when compared with the magnitude of the rehabilitation task at hand. Too often, distribution system replacement costs are underfunded and the first item to be slashed when budget problems arise. Overall, distribution system maintenance is reactionary in much of the older systems. Since the majority of the antiquated system will require removal and replacement beyond the CWS funding resources for systematic upgrade, a reactionary rehabilitation program is inevitable and must be funded accordingly."

Call or email me if you need anything further.

b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713

PPI cell

# Letter Buckslip

12-Oct-15

ID:	DIR00177	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ <input type="checkbox"/> Delogged
Date of letter:	10/1/2015	
Date received:	10/2/2015	
Date due:	10/19/2015	
Reply date:		
Last name:	Tallman	
First name:	Sarah C.	
Organization:	Natural Resources Defense Council	
Subject:	Petition for Emergency Action under the Safe Drinking Water Act to Abate the Imminent and Substantial Endangerment to Flint, Michigan Residents	
Reply to:		
Author:		
Owner:	OLSZEWSKIR	

Action	Action Date	Due Date	Entity	Signature	Owner	CCs
Assigned 1	10/12/2015	10/19/2015	EXE	HAA	OLSZEWSKIR	Thelen Sygo Shekter Smith Devereaux Manning/Hart File 2-2 EPA

Comments: Original to EXE (Jim Sygo)

Jim Sygo to discuss with AG's office and ODWMA. Disc w/exhibits went to Sygo. Mbt

11/2 R  
 Please print me update  
 buck slip on this one &  
 return  
 T. H. M.

DIR00177

NATURAL RESOURCES DEFENSE COUNCIL

October 1, 2015

**Via FedEx**

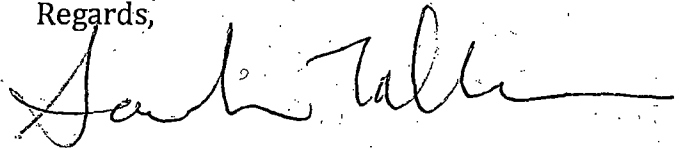
Dan Wyant, Director  
Michigan Department of Environmental Quality  
Executive Division  
P.O. Box 30473  
Lansing, MI 48909-7973

Re: *Petition for Emergency Action under the Safe Drinking Water Act to  
Abate the Imminent and Substantial Endangerment to Flint, Michigan  
Residents*

Director Wyant:

Enclosed please find a Petition for Emergency Action under Section 1431 of the Safe Drinking Water Act to abate the imminent and substantial endangerment to Flint, Michigan residents from lead contamination in their drinking water, served on EPA Administrator McCarthy today. I have also enclosed a CD containing the exhibits to the Petition.

Regards,



Sarah C. Tallman  
Natural Resources Defense Council  
20 N. Wacker Drive, Suite 1600  
Chicago, IL 60622  
(312) 651-7918  
stallman@nrdc.org

Enclosure

**BEFORE THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

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**Petition for Emergency Action under the Safe Drinking Water Act, 42 U.S.C. § 300i, to Abate  
the Imminent and Substantial Endangerment to Flint, Michigan Residents from Lead  
Contamination in Drinking Water**

---

**Submitted on Behalf of Petitioners Coalition for Clean Water, Concerned Pastors for  
Social Action, Water You Fighting For, Democracy Defense League Water Task Force,  
Flint Water Study Team, Michigan Nurses Association, NAACP – Michigan State  
Conference, Michigan Chapter of the National Conference of Black Lawyers, American  
Civil Liberties Union of Michigan, and the Natural Resources Defense Council**

October 1, 2015

**Notice of Petition**

Gina McCarthy  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Mail Code: 1101A  
Washington, DC 20460

Susan Hedman  
Regional Administrator  
U.S. Environmental Protection Agency Region 5  
77 West Jackson Boulevard  
Mail Code: R-19J  
Chicago, IL 60604-3507

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1. Dominic Adams, *Closing the valve on history: Flint cuts water flow from Detroit after nearly 50 years*, Michigan Live (Apr. 25, 2014)
2. Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Department (Mar. 7, 2014)
3. Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation (July 16, 2015)
4. Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post (July 10, 2015)
5. Laura Gottesdiener, *Flint, Mich., Residents find state water control hard to swallow*, Al Jazeera America (Apr. 3, 2015)
6. Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live (Sept. 5, 2014)
7. Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press (Jan. 23, 2015)
8. Michigan Department of Environmental Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014)
9. U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water
10. Order Den. Mot. for Prelim. Inj. 1, *Coalition for Clean Water v. City of Flint*, No. 15-cv-12084 (E.D. Mich. June 23, 2015)
11. Marc Edwards, *Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015)
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13. Brianna Owczarzak, *GM says no to Flint water*, WNEM (Oct. 14, 2014)
14. U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013)
15. U.S. EPA, Basic Information About Lead in Drinking Water (last updated June 26, 2015)
16. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015)



17. City of Flint, City of Flint Issues Lead Advisory (Sept. 25, 2015)
18. H.R. Rep. No. 93-1185, 1974 U.S.C.C.A.N. 6454, 6487 (1974); *In re Yakima Valley Dairies*, Admin. Order on Consent (U.S. EPA Region 10, Mar. 5, 2013)
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20. Ron Fonger, *Groups collect 26,000 signatures to end use of Flint River for Water*, Michigan Live (Aug. 31, 2015)
21. Ron Fonger, *Flint mayor accepts petitions but not call to end use of Flint River*, Michigan Live (Aug. 31, 2015)
22. William E. Ketchum III, *People take to streets to protest Flint water quality*, Michigan Live (Feb. 14, 2015)
23. AP, *Flint city councilman: 'We got bad water,'* Detroit Free Press (Jan. 14, 2015)
24. Letter from Jim Ananich, Mich. Sen. Minority Leader and Sheldon Neeley, Phil Phelps, Mich. State Representatives, to Dan Wyant, MDEQ (Sept. 10, 2015)
25. Letter from U.S. Representative Dan Kildee, U.S. Representative, to Administrator Gina McCarthy, U.S. EPA, & Director Dan Wyant, MDEQ (Sept. 9, 2015)
26. *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study (Sept. 16, 2015)
27. Siddhartha Roy, *Flint Water Study Updates for the Citizens of Flint* (Sept. 15, 2015)
28. Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live (Sept. 15, 2015)
29. *Lead testing results for water sampled by residents*, Flint Water Study (last visited Sept. 28, 2015)
30. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (Mar. 18, 2015)
31. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (June 4, 2015)
32. Consumer Notice of Lead & Copper Results in Drinking Water (Feb. 18, 2015)
33. Mich. Dep't of Env'tl. Quality, *Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply* (Aug. 20, 2015)
34. Drinking Water Lead & Copper Sampling Instructions

35. Memorandum from Miguel A. Del Toral, Regulations Mgr., Ground Water and Drinking Water Branch, U.S. EPA Region 5, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, U.S. EPA Region 5, re High Levels in Flint, Michigan—Interim Report 2 (June 24, 2015)
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38. MDEQ, Frequently Asked Questions: Water Lead Levels in the City of Flint (Sept. 2015)
39. Centers for Disease Control and Prevention, Preventing Lead Poisoning in Your Children: Chapter 2 (Oct. 1991)
40. Centers for Disease Control and Prevention, *What Do Parents Need to Know to Protect Their Children?* (last updated June 19, 2014)
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46. CDC, *Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water—District of Columbia, 2004*, 53 MMWR Weekly 268 (Apr. 2, 2004)
47. Marc Edwards, *Fetal Death and Reduced Birth Rates Associated with Exposure to Lead-Contaminated Drinking Water*, 48 Env'tl. Sci. & Tech. 739 (2013)
48. Email from Jennifer Crooks, U.S. EPA, to Mike Prysby (Feb. 26, 2015)
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50. Kristi Tanner & Nancy Kaffer, *State data confirms higher blood-lead levels in Flint kids*, Detroit Free Press (Sept. 29, 2015)
51. Centers for Disease Control and Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013)
52. American FactFinder, 2009-2013 American Community Survey 5-year Estimates, Flint, Michigan and State of Michigan
53. American Cancer Society, *Lead, Lead in the Environment* (last updated May 27, 2014)
54. 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 2013)
55. CPSC, *CPSC Announces Final Ban on Lead-Containing Paint* (Sept. 2, 1977)
56. Dominic Adams, *State says Flint hasn't applied for permit to use river as drinking water source*, Michigan Live (Mar. 28, 2014)
57. Email from Stephen Busch, MDEQ, to Jennifer Crooks and Miguel Del Toral, U.S. EPA (Feb. 27, 2015)
58. Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015)
59. Email from Michael Glasgow (June 1, 2015)
60. City of Flint Water Plant, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Jul. 28, 2015)
61. Email from Adam Rosenthal, MDEQ, to Michael Glasgow, Brent Wright, City of Flint (June 25, 2015)
62. Letter from MDEQ to MI State Senators (Sept. 17, 2015)
63. *Did this Michigan Town Poison its Children?*, U.S. News & World Report (Sept. 24, 2015)
64. Ron Fonger, *Feds sending in experts to help Flint keep lead out of water*, Michigan Live (Sept. 10, 2015)
65. Ron Fonger, *Flint will have lead-reduction plan for water system by 2016, officials say*, Michigan Live (Sept. 3, 2015)
66. Amanda Emery, *Flint public school students told to bring own water to school*, Michigan Live (Sept. 25, 2015)

67. U.S. Census Bureau, American FactFinder, 2010 Demographic Profile Data, Flint Michigan
68. 2009-2013 American Community Survey 5-Year Estimates, Children's Characteristics, Flint, Michigan
69. Dominic Adams, *Flint monthly water and sewer bills highest in Genesee County by \$35*, Michigan Live (June 1, 2014)
70. Ron Fonger, *Judge orders Flint to cut water rates 35 percent in sweeping injunction*, Michigan Live (Aug. 7, 2015)
71. U.S. EPA, Planning for an Emergency Drinking Water Supply (June 2011)
72. U.S. EPA, Memorandum re: Update on Providing Alternative Water Supply as Part of Superfund Response Actions (Sept. 24, 2010)

The residents of Flint, Michigan have been and continue to be exposed to dangerous levels of lead in their drinking water. Monitoring results confirm that, in many instances, these levels are well above the threshold set by the U.S. Environmental Protection Agency (EPA) that triggers mandatory corrective action by public water systems. The City of Flint and the Michigan Department of Environmental Quality (MDEQ) have failed to address this public health crisis, despite their awareness of these monitoring results and data showing increasing blood lead levels in children residing in Flint.

The Coalition for Clean Water, Concerned Pastors for Social Action, Water You Fighting For, Democracy Defense League Water Task Force, Flint Water Study Team, Michigan Nurses Association, NAACP – Michigan State Conference, Michigan Chapter of the National Conference of Black Lawyers, American Civil Liberties Union of Michigan, and Natural Resources Defense Council (collectively, Petitioners) petition EPA to use its emergency powers under the Safe Drinking Water Act (SDWA or the Act), 42 U.S.C. § 300i, to take action to abate the imminent and substantial endangerment to human health caused by lead contamination in Flint's drinking water. As Petitioners demonstrate below, this contamination meets the SDWA requirements for immediate action by EPA and requires a comprehensive federal response.

## **I. Background**

Water-quality problems have plagued Flint's water system since at least April 2014, when the City began using the Flint River as its water source after deciding not to continue purchasing water from Lake Huron through the Detroit Water and Sewerage Department, as it had done for nearly fifty years.<sup>1</sup> In the eighteen months since the switch to Flint River water, the City's drinking water has been at times discolored, foul smelling, and "laden with sediments."<sup>2</sup> Residents report that they have experienced hair loss, skin rashes, and vomiting after drinking the water.<sup>3</sup> In the summer of 2014, the City was forced to issue several boil-water notices after tap water tested positive for total coliform bacteria, which

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<sup>1</sup> See Dominic Adams, *Closing the valve on history: Flint cuts water flow from Detroit after nearly 50 years*, Michigan Live, Apr. 25, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/04/closing\\_the\\_valve\\_on\\_history\\_f.html](http://www.mlive.com/news/flint/index.ssf/2014/04/closing_the_valve_on_history_f.html) (attached as Ex. 1); Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Dep't (Mar. 7, 2014) (explaining that the City "has actively pursued using the Flint River as a temporary water source" instead of accepting Detroit's offer to "provide[] Flint with the option of continuing to purchase water from DWSD") (attached as Ex. 2).

<sup>2</sup> See Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation, July 16, 2015, <http://www.thenation.com/article/in-flint-michigan-overpriced-water-is-causing-peoples-skin-to-erupt-and-hair-to-fall-out/> (attached as Ex. 3); Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post, July 10, 2015, [http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues\\_b\\_7765132.html](http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues_b_7765132.html) (attached as Ex. 4).

<sup>3</sup> Laura Gottesdiener, *Flint, Mich., Residents find state water control hard to swallow*, Al Jazeera America, Apr. 3, 2015, <http://america.aljazeera.com/articles/2015/4/3/flint-residents-find-state-water-control-hard-to-swallow.html> (attached as Ex. 5).

suggested a possible "pathway for pathogens and fecal contamination" to enter the water system.<sup>4</sup>

The City's subsequent treatment of the water to kill disease-carrying pathogens resulted in elevated levels of total trihalomethanes (TTHM), a byproduct of disinfection.<sup>5</sup> Drinking water with TTHM levels that exceed the federal limit can cause "liver, kidney, or central nervous system problems and increased risk of cancer."<sup>6</sup> In response to the City's water problems, local hospitals, schools, and museums began using bottled water instead of tap water.<sup>7</sup> Some grocery stores reduced the price of bottled water and "sponsored community giveaways of bottled water to low income residents."<sup>8</sup>

Flint River water is also highly corrosive, causing dangerous amounts of lead to leach out of pipes and into the City's water system.<sup>9</sup> Recent sampling has shown that lead is present in Flint's water system at levels well above 15 parts per billion (ppb); the "action level" for lead under the SDWA.<sup>10</sup> These high lead levels put residents at risk of increased lead exposure, which can cause a broad array of serious, irreversible health effects, including cognitive impairment, decreased red blood cell survival, kidney damage, coronary heart disease, and impaired reproductive function.<sup>11</sup>

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<sup>4</sup> Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live, Sept. 5, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/09/flint\\_issues\\_boil\\_water\\_adviso.html](http://www.mlive.com/news/flint/index.ssf/2014/09/flint_issues_boil_water_adviso.html) (attached as Ex. 6).

<sup>5</sup> Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press, Jan. 23, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/22/water-woes-latest-hit-flint/22193291/> (attached as Ex. 7); Mich. Dep't of Env'tl. Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014) (attached as Ex. 8).

<sup>6</sup> U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm> (last updated Dec. 13, 2013) (attached as Ex. 9); see 40 C.F.R. § 141.64(b).

<sup>7</sup> Order Den. Mot. for Prelim. Inj. 1, *Coalition for Clean Water v. City of Flint*, No. 15-cv-12084 (E.D. Mich. June 23, 2015), ECF No. 6 (attached as Ex. 10).

<sup>8</sup> *Id.*

<sup>9</sup> Marc Edwards, *Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015), <http://flintwaterstudy.org/2015/09/test-update-flint-river-water-19x-more-corrosive-than-detroit-water-for-lead-solder-now-what/> (attached as Ex. 11); Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015), <http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/> (attached as Ex. 12). The river water is so corrosive that in October 2014, a local GM engine plant decided to switch back to Lake Huron water to avoid damage to equipment at the plant from corrosion. Brianna Owczarzak, *GM says no to Flint water*, WNEM, Oct. 14, 2014, <http://www.wnem.com/story/26785625/gm-says-no-to-flint-water> (attached as Ex. 13).

<sup>10</sup> 40 C.F.R. § 141.80(c)(1).

<sup>11</sup> See, e.g., U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013) (attached as Ex. 14) (summarizing health effects of lead exposure); U.S. EPA, Basic

The City of Flint and the Michigan Department of Environmental Quality (MDEQ) have been aware of independent monitoring results showing exceedingly high lead levels in the City's drinking water for months.<sup>12</sup> Despite increasing public concern about the safety of the City's drinking water, neither the City nor MDEQ has taken the actions necessary to meaningfully address the problem. The City has not implemented *any* measures to treat the highly corrosive Flint River water to reduce the amount of lead leaching from service pipes.<sup>13</sup> And MDEQ refuses to use its enforcement authority under the SDWA or state law to require Flint to employ corrosion control measures or provide alternative safe water supplies.<sup>14</sup>

When state and local authorities fail to adequately address a public health crisis, the SDWA empowers EPA to act. Section 1431 of the Act vests EPA with broad emergency authority to address endangerments to public health from contaminated drinking water. The EPA Administrator may use these emergency powers "upon receipt of information that a contaminant which is present in or is likely to enter a public water system . . . may present an imminent and substantial endangerment to the health of persons, and that appropriate State and local authorities have not acted to protect the health of such persons."<sup>15</sup> Once the Administrator receives this information, she may "take such actions as [s]he may deem necessary in order to protect [public] health."<sup>16</sup> These actions "may include (but shall not be limited to) . . . issuing such orders as may be necessary to protect the health of persons who are or may be users of such system (including travelers), including

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Information About Lead in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm> (last updated June 26, 2015) (explaining that "[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development," and that "[a]dults who drink this water over many years could develop kidney problems or high blood pressure") (attached as Ex. 15); *see also* National Ambient Air Quality Standards for Lead, 80 Fed. Reg. 278, 290 (Jan. 5, 2015).

<sup>12</sup> *See, e.g.*, Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015) (describing "[b]ig worries" for high lead test results at a Flint resident's home) (attached as Ex. 16).

<sup>13</sup> The City's plan to implement corrosion control measures within thirty to sixty days is inadequate to address the ongoing endangerment. *See* City of Flint, City of Flint Issues Lead Advisory (Sept. 25, 2015), <https://www.cityofflint.com/2015/09/25/city-of-flint-issues-lead-advisory/> (attached as Ex. 17).

<sup>14</sup> *See* Mich. Comp. Laws Ann. §§ 325.1015(1) ("When considered necessary for protection of the public health, the department shall notify a supplier of water of the need to make changes in operations, to provide treatment, [or] to make structural changes in existing systems . . . as necessary to produce and distribute an adequate quantity of water meeting the state drinking water standards."), (3) ("If a public water supply poses an imminent hazard to the public health, the department may issue an emergency order immediately, . . . requiring such action as the department determines is necessary to protect the public health.").

<sup>15</sup> 42 U.S.C. § 300i(a).

<sup>16</sup> *Id.*

orders requiring the provision of alternative water supplies by persons who caused or contributed to the endangerment.”<sup>17</sup> EPA has, in the past, used its emergency powers to issue orders to provide alternative safe water sources to community members, require public notice of the drinking water hazard, require contributors to the hazard to treat or otherwise mitigate the hazardous conditions, and require additional monitoring and data-collection activities.<sup>18</sup>

As Petitioners demonstrate below, the lead contamination in Flint’s drinking water meets the prerequisites that authorize EPA to take emergency action under the SDWA.

## II. Interests of Petitioners

Petitioners are community groups and advocacy organizations seeking safe and clean water for all residents in Flint. For instance, the Coalition for Clean Water (Coalition), which includes Concerned Pastors for Social Action, Water You Fighting For, and Democracy Defense League Water Task Force, among other community members, has urged city and state officials for months to address Flint’s water-quality problems. The Coalition filed a lawsuit in June 2015 in the Circuit Court for the County of Genesee seeking declaratory, injunctive, and other relief relating to Flint’s water-quality problems.<sup>19</sup> In August 2015, Food and Water Watch, Water You Fighting For, and the Coalition for Clean Water collected more than 26,000 signatures on a petition to Mayor Dayne Walling asking the City to end its use of the Flint River as a drinking water source.<sup>20</sup> Community members have also organized marches<sup>21</sup> and met with City Council<sup>22</sup> to raise concerns about the quality of Flint’s drinking water. These advocacy activities fueled awareness and concern

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<sup>17</sup> *Id.*

<sup>18</sup> See H.R. Rep. No. 93-1185, 1974 U.S.C.C.A.N. 6454, 6487 (1974); *In re Yakima Valley Dairies*, Admin. Order on Consent (U.S. EPA Region 10, Mar. 5, 2013), [http://www.epa.gov/region10/pdf/sites/yakimagw/consent\\_order\\_yakima\\_valley\\_dairies\\_march2013.pdf](http://www.epa.gov/region10/pdf/sites/yakimagw/consent_order_yakima_valley_dairies_march2013.pdf) (attached as Ex. 18).

<sup>19</sup> Compl., *Coalition for Clean Water v. City of Flint*, No. 104900-cz (Mich. Cir. Ct. June 5, 2015) (attached as Ex. 19).

<sup>20</sup> Ron Fonger, *Groups collect 26,000 signatures to end use of Flint River for Water*, Michigan Live, Aug. 31, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/groups\\_delivering\\_26000\\_signat.html#incart\\_river](http://www.mlive.com/news/flint/index.ssf/2015/08/groups_delivering_26000_signat.html#incart_river) (attached as Ex. 20); Ron Fonger, *Flint mayor accepts petitions but not call to end use of Flint River*, Michigan Live, Aug. 31, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/flint\\_mayor\\_accepts\\_petitions.html](http://www.mlive.com/news/flint/index.ssf/2015/08/flint_mayor_accepts_petitions.html) (attached as Ex. 21).

<sup>21</sup> William E. Ketchum III, *People take to streets to protest Flint water quality*, Michigan Live, Feb. 14, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/02/flint\\_residents\\_protest\\_citys.html](http://www.mlive.com/news/flint/index.ssf/2015/02/flint_residents_protest_citys.html) (attached as Ex. 22).

<sup>22</sup> AP, *Flint city councilman: ‘We got bad water,’* Detroit Free Press, Jan. 14, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/14/flint-water-resident-complaints/21743465/> (attached as Ex. 23).



among residents and some elected officials in Flint,<sup>23</sup> but have not resulted in any comprehensive action by the City or the State.

**III. Lead present in and likely to continue to enter Flint's water system presents an imminent and substantial endangerment to human health**

**A. Lead is present in and likely to continue to enter Flint's water system**

Flint's residents face ongoing endangerment from lead in their drinking water. Recent sampling data show that dangerously high levels of lead are present in and will likely continue to enter Flint's water system.<sup>24</sup> In August and September 2015, Dr. Marc Edwards, a water resources engineering professor at Virginia Tech, tested 252 drinking water samples collected from Flint residences. Edwards found that *ten percent* of these samples had lead levels of 25 ppb or more, substantially in excess of the federal action level of 15 ppb.<sup>25</sup> Several samples exceeded 100 ppb, and one sample exceeded 1000 ppb.<sup>26</sup> Edwards' sampling data show that lead—a contaminant under the SDWA<sup>27</sup>—is present in Flint's water system.

The results of Edwards' testing are even more concerning because the sampling did not target high-risk residences, as the City is required to do under the Lead and Copper Rule.<sup>28</sup> Because lead levels in a water system are not evenly distributed, EPA requires monitoring for lead under the SDWA to target high-risk residences, "to better ensure that high levels of lead are detected and that the system institutes treatment that provides

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<sup>23</sup> See Letter from Jim Ananich, Mich. Sen. Minority Leader and Sheldon Neeley, Phil Phelps, Mich. State Representatives, to Dan Wyant, MDEQ (Sept. 10, 2015) (attached as Ex. 24); Letter from U.S. Representative Dan Kildee, U.S. Representative, to Adm'r Gina McCarthy, U.S. EPA, and Director Dan Wyant, MDEQ (Sept. 9, 2015) (attached as Ex. 25).

<sup>24</sup> Flint's water system is a "public water system" for purposes of the SDWA because it provides water for human consumption to more than twenty-five individuals. 42 U.S.C. § 300f(4).

<sup>25</sup> *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study (Sept. 16, 2015), <http://flintwaterstudy.org/2015/09/distribution-of-lead-results-across-flint-by-ward-and-zip-codes/> (attached as Ex. 26); Siddhartha Roy, *Flint Water Study Updates for the Citizens of Flint* (Sept. 15, 2015) (attached as Ex. 27); Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live, Sept. 15, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/virginia\\_tech\\_researcher\\_says.html](http://www.mlive.com/news/flint/index.ssf/2015/09/virginia_tech_researcher_says.html) (attached as Ex. 28).

<sup>26</sup> *Lead testing results for water-sampled by residents*, Flint Water Study, <http://flintwaterstudy.org/information-for-flint-residents/results-for-citizen-testing-for-lead-300-kits/> (attached as Ex. 29).

<sup>27</sup> See 42 U.S.C. § 300f(6).

<sup>28</sup> 40 C.F.R. § 141.86(a)(3)-(5); 56 Fed. Reg. 26,460, 26,514 (June 7, 1991) (adopting approach that "require[s] water systems to collect samples from high-risk residences that are most likely to have lead problems").

uniform and adequate levels of public health protection.”<sup>29</sup> Because targeting high-risk residences “means that the detected levels will likely be higher than if sampling were randomly distributed,”<sup>30</sup> Edwards’ data showing a 90th percentile lead level of 25 ppb is particularly alarming given that his sampling protocol would be expected to produce *lower* results than the targeted sampling protocol mandated by the Lead and Copper Rule.

The City’s monitoring data confirm that some Flint residents’ water contains lead at concentrations above the federal action level. Several samples collected by the City showed lead levels as high as 397 ppb, 25 times the action level.<sup>31</sup> Although the City claims that its data show that the 90th percentile lead concentration is lower than the 90th percentile in Edwards’ sampling pool, these differences may be attributable to the sampling methods employed by the City. For instance, the City instructed residents to pre-flush their water for “at least 5 minutes” before collecting the sample.<sup>32</sup> Pre-flushing has the effect of reducing the amount of lead in the sample, which is why one of the key steps residents can take to reduce their lead exposure following discovery of a lead problem is to flush their taps prior to consuming tap water.<sup>33</sup> Pre-flushing in sampling results in “significant underestimation of lead levels in drinking water.”<sup>34</sup> Pre-flushing is not included in the collection procedures EPA recommends,<sup>35</sup> and is contrary to the Lead and Copper Rule’s intent to use worst-case lead and copper sampling data.<sup>36</sup> Evidence also shows that in the January to June 2015 monitoring period, the City did not use a pre-developed sampling pool that targeted high-

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<sup>29</sup> 56 Fed. Reg. at 26,514.

<sup>30</sup> *Id.*

<sup>31</sup> See Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ (Mar. 18, 2015) (referring to sample with lead level at 397 ppb) (attached as Ex. 30); Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (June 4, 2015) (referring to samples showing lead levels 22 ppb and 40 ppb) (attached as Ex. 31); Consumer Notice of Lead & Copper Results in Drinking Water (Feb. 18, 2015) (lead level at 104 ppb) (attached as Ex. 32); *see also* Mich. Dep’t of Env’tl. Quality, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Aug. 20, 2015) (showing six samples with lead levels over the action level) (attached as Ex. 33).

<sup>32</sup> Drinking Water Lead & Copper Sampling Instructions, *available at* [http://www.michigan.gov/documents/deq/Lead\\_Copper\\_Sampling\\_Instructions\\_329915\\_7.pdf](http://www.michigan.gov/documents/deq/Lead_Copper_Sampling_Instructions_329915_7.pdf) (attached as Ex. 34).

<sup>33</sup> Memorandum from Miguel A. Del Toral, Regulations Mgr., Ground Water and Drinking Water Branch, U.S. EPA Region 5, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, U.S. EPA Region 5, re High Levels in Flint, Michigan—Interim Report 2 (June 24, 2015) (attached as Ex. 35).

<sup>34</sup> *Id.*

<sup>35</sup> U.S. EPA, Lead and Copper Rules Monitoring and Reporting Guidance for Public Water Systems 28 (Mar. 2010) (attached as Ex. 36).

<sup>36</sup> See Letter from Cynthia C. Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008) (“[W]e believe that [pre-flushing] goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowners in the sample.”) (attached as Ex. 37).

risk residences and did not sample sites consistently across monitoring periods.<sup>37</sup> This likewise may have caused the City's sampling results to underrepresent the 90th percentile lead level in the water system.<sup>38</sup>

The lead contamination in Flint's water is likely to continue. As EPA has explained, "[t]he amount of lead in drinking water depends heavily on the corrosivity of the water,"<sup>39</sup> and testing has shown that Flint River water is highly corrosive. Moreover, the City has no treatment program in place to control the corrosive effects of the water on the City's thousands of lead service lines.<sup>40</sup>

**B. Lead in drinking water presents an imminent and substantial endangerment to Flint residents**

The endangerment to Flint residents from lead in drinking water is both "imminent" and "substantial."<sup>41</sup> The endangerment to community members' health is imminent because the threat "is present now."<sup>42</sup> Highly corrosive water in the Flint River has been flowing through lead service lines in Flint's water system for more than a year without any corrosion control treatment, and sampling has already shown the existence of dangerously high levels of lead in residents' tap water.

The seriousness of the potential harms from lead exposure renders the endangerment "substantial" for purposes of the SDWA.<sup>43</sup> The poisonous effects of lead on "virtually every system in the body," and particularly on the developing brains of young children, are well documented.<sup>44</sup> "Even low levels of lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement," effects that are irreversible.<sup>45</sup>

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<sup>37</sup> See *infra* p. 11 & nn. 70-74; 40 C.F.R. § 141.86(a), (b)(4).

<sup>38</sup> See *infra* p. 11-12.

<sup>39</sup> 56 Fed. Reg. 26,460, 26,466 (June 7, 1991).

<sup>40</sup> MDEQ, Frequently Asked Questions: Water Lead Levels in the City of Flint (Sept. 2015), [https://www.michigan.gov/documents/deq/deq-spotlight-Flint\\_water\\_FAQs\\_500946\\_7.pdf](https://www.michigan.gov/documents/deq/deq-spotlight-Flint_water_FAQs_500946_7.pdf) (stating that Flint has more than 15,000 lead service lines) (attached as Ex. 38).

<sup>41</sup> *Id.* § 300i.

<sup>42</sup> *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 486 (1996) (interpreting substantial-and-imminent-endangerment provision in RCRA).

<sup>43</sup> *E.g., Me. People's Alliance v. Mallinckrodt, Inc.*, 471 F.3d 277, 288 (1st Cir. 2006).

<sup>44</sup> Centers for Disease Control and Prevention, Preventing Lead Poisoning in Your Children: Chapter 2 (Oct. 1991), <http://www.cdc.gov/nceh/lead/publications/books/plpyc/chapter2.htm> (attached as Ex. 39); see also 80 Fed. Reg. 278, 290 (Jan. 5, 2015) ("Lead has been demonstrated to exert a broad array of deleterious effects on multiple organ systems."); 56 Fed. Reg. 26,460, 26,467-68 (June 7, 1991).

<sup>45</sup> Centers for Disease Control and Prevention, *What Do Parents Need to Know to Protect Their Children?* (last updated June 19, 2014), [http://www.cdc.gov/nceh/lead/ACCLPP/blood\\_lead\\_levels.htm](http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm) (attached as Ex. 40).

The scientific community has not identified *any* threshold of lead in blood below which there are no adverse health impacts.<sup>46</sup>

Increased lead exposure from drinking water is dangerous because “drinking water can make up 20 percent or more of a person’s total exposure to lead.”<sup>47</sup> For infants whose diet consists of baby formula made with drinking water, lead in drinking water can make up between forty and sixty percent of total lead exposure.<sup>48</sup> Lead levels in drinking water above the federal action level have been associated with an increase in the rate of individuals with elevated blood lead levels.<sup>49</sup> Exposure to lead-contaminated drinking water has also been associated with fetal death and reduced birth rates.<sup>50</sup> As EPA has recognized, “[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development.”<sup>51</sup> In short, there is no safe level of lead in drinking water.<sup>52</sup>

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<sup>46</sup> Centers for Disease Control and Prevention, National Biomonitoring Program, Factsheet: Lead (last updated Jul. 12, 2013), [http://www.cdc.gov/biomonitoring/Lead\\_Fact\\_Sheet.html](http://www.cdc.gov/biomonitoring/Lead_Fact_Sheet.html) (“No safe blood lead level has been identified.”) (attached as Ex. 41).

<sup>47</sup> U.S. EPA, Lead and Copper Rule: A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act (Oct. 2005), [http://www.epa.gov/safewater/schools/pdfs/lead/qrg\\_lcr\\_schools.pdf](http://www.epa.gov/safewater/schools/pdfs/lead/qrg_lcr_schools.pdf) (attached as Ex. 42).

<sup>48</sup> Lead in Drinking Water, Wisc. Dep’t of Nat. Res. 2008), <http://dnr.wi.gov/topic/drinkingwater/documents/forms/lead.pdf> (attached as Ex. 43). Several cases have also been reported in which infant formula constituted from lead-contaminated tap water was determined to be the sole cause of childhood lead poisoning. See, e.g., Michael Shannon & John W. Graef, *Lead Intoxication: From Lead-contaminated Water Used to Reconstitute Infant Formula*, 28 *Clinical Pediatrics* (8) 380, 381 (1989) (attached as Ex. 44).

<sup>49</sup> Ronnie Levin, et al., *Lead Exposures in U.S. Children, 2008: Implications for Prevention*, 116 *Environ. Health Perspect.* (1) 1285-93 (2008), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569084/> (attached as Ex. 45); CDC, *Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water—District of Columbia, 2004*, 53 *MMWR Weekly* (No. 12) 268-70 (Apr. 2, 2004), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5312a6.htm> (attached as Ex. 46).

<sup>50</sup> Marc Edwards, *Fetal Death and Reduced Birth Rates Associated with Exposure to Lead-Contaminated Drinking Water*, 48 *Envtl. Sci. & Tech.* 739-40 (2013), available at <http://pubs.acs.org/doi/pdf/10.1021/es4034952> (attached as Ex. 47).

<sup>51</sup> U.S. EPA, Basic Information about Lead in Drinking Water, *supra* note 11.

<sup>52</sup> See Email from Jennifer Crooks, U.S. EPA, to Mike Prysby, MDEQ (Feb. 26, 2015) (“[T]here are no safe levels of lead in drinking water.”) (attached as Ex. 48); City of Flint Issues Lead Advisory, *supra* note 13 (recognizing that “no level of lead is considered safe”). Because no safe level of lead in blood has been identified, EPA promulgated a Maximum Contaminant Level Goal for lead in drinking water of *zero*, reflecting EPA’s determination that a threshold of zero lead in drinking water is the level at which “no known or anticipated adverse effects” on human health will occur, allowing for a margin of safety. See 40 C.F.R. §§ 141.2, 141.51(b).

Petitioners have reason to be concerned about the health impacts of increased exposure to lead in drinking water. A recent study conducted by researchers at Flint's Hurley Medical Center found that the rate of Flint children with elevated blood lead levels is rising. An analysis of 1746 Flint children under five years old showed that the proportion of children with elevated blood lead levels has *doubled* in the time since the City changed its drinking water source.<sup>53</sup> The study found that the rate of elevated blood lead levels in children under fifteen months is 2.5 times greater after the switch to Flint River water than the rate before the switch.<sup>54</sup> The study found no corresponding statistically significant increase in the rate of elevated blood lead levels of children living in Genesee County outside of Flint.<sup>55</sup> Data released by the State confirm that the percentage of Flint children under sixteen with elevated blood levels has risen (from 2.37% to 3.21%) since the switch to Flint River water.<sup>56</sup>

This increased rate of children with elevated blood lead levels is even more alarming because the Flint community may be more at risk for elevated blood lead levels and lead poisoning than communities elsewhere in the country. Michigan ranks fifth worst in the country for harmful exposures to lead.<sup>57</sup> Low income is a risk factor for lead poisoning, and the proportion of families living below the poverty level in Flint is more than three times the national proportion (35.5% in Flint vs. 11.3% nationally in 2013 estimates).<sup>58</sup> Living in housing built before 1978 (when the federal ban on high-lead paint went into effect) is also a risk factor, because dust from lead paint continues to be a major source of lead exposure in children.<sup>59</sup> Nearly 90% of housing in Flint was built before

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<sup>53</sup> Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community (PowerPoint Presentation), *available at* <http://flintwaterstudy.org/2015/09/pediatric-lead-exposure-presentation-from-hurley-medical-center-doctors-concerning-flint-mi/> (attached as Ex. 49).

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> Kristi Tanner & Nancy Kaffer, *State data confirms higher blood-lead levels in Flint kids*, Detroit Free Press, Sept. 29, 2015, <http://www.freep.com/story/opinion/columnists/nancy-kaffer/2015/09/26/state-data-flint-lead/72820798/> (attached as Ex. 50).

<sup>57</sup> Centers for Disease Control and Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013), [http://www.cdc.gov/nceh/information/healthy\\_homes\\_lead.htm](http://www.cdc.gov/nceh/information/healthy_homes_lead.htm) (attached as Ex. 51).

<sup>58</sup> 2009-2013 American Community Survey 5-year Estimates, 2013, *available at* <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml> (enter "Flint, MI" in the box under "Community Facts," click on "Income" on left-side bar, then click "Selected Economic Characteristics" under "2013 American Community Survey") (table attached as Ex. 52 compares data from Flint, MI to Michigan and the United States).

<sup>59</sup> See, e.g., Am. Cancer Soc'y, *Lead, Lead in the Environment*, <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/lead> (last updated May 27, 2014) (characterizing lead paint as a "major" source of exposure) (attached as Ex. 53).

1978.<sup>60</sup> These factors show that the risks to Flint residents from lead exposure may be particularly acute.

The monitoring data showing high lead levels in Flint drinking water, combined with the well-known serious adverse health impacts of lead exposure, demonstrate "a substantial likelihood that contaminants capable of causing adverse health effects will be ingested by consumers if preventive action is not taken."<sup>61</sup> These circumstances constitute an imminent and substantial endangerment warranting emergency federal action.<sup>62</sup>

#### **IV. Neither the City nor MDEQ has acted to protect Flint residents from continuing health risks of exposure to high lead levels in drinking water**

Federal emergency action is necessary because neither the City nor MDEQ has adequately addressed the danger to Flint residents from lead in their drinking water. To date, the local and state response to lead concerns has been, at best, nominal and ineffective.<sup>63</sup>

The state-appointed emergency manager and MDEQ allowed the City to begin using the Flint River as its water source without adequately ensuring that the system would continue to "operate and maintain optimal corrosion control treatment," as required by the SDWA.<sup>64</sup> The Lead and Copper Rule requires states to "review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system."<sup>65</sup> But as of March 28, 2014, three weeks before the City planned to start using Flint River water, the City had not even submitted an application to the State for approval to make the change.<sup>66</sup> A month later, MDEQ had approved the change without requiring the City to implement corrosion control measures, as required by the Lead and

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<sup>60</sup> 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 2013), [https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels\\_419508\\_7.pdf](https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels_419508_7.pdf) (attached as Ex. 54); see CPSC, *CPSC Announces Final Ban on Lead-Containing Paint* (Sept. 2, 1977), <http://www.cpsc.gov/en/Recalls/1977/CPSC-Announces-Final-Ban-On-Lead-Containing-Paint/> (attached as Ex. 55); Maj. Thomas F. Zimmerman, *The Regulation of Lead-Based Paint in Air Force Housing*, 44 Air Force L. Rev. 169, 175 (1998).

<sup>61</sup> H.R. Rep. No. 93-1185, 1974 U.S.C.A.N. 6454, 6488 (July 10, Aug. 15, 1974) (defining when an endangerment may be considered substantial).

<sup>62</sup> See *Trinity Am. Corp. v. U.S. E.P.A.*, 150 F.3d 389, 399 (4th Cir. 1998) (imminent and substantial endangerment found when "dangerous levels of [a] contaminant[] exist in [the] water supply," and that the contaminant "pose[s] a great risk to human health").

<sup>63</sup> See *id.* at 397 (explaining that "minor" and "ineffective" action by state and local authorities does not "strip EPA of its statutory emergency powers").

<sup>64</sup> 40 C.F.R. § 141.81(b).

<sup>65</sup> 40 C.F.R. § 141.81(b)(3)(iii).

<sup>66</sup> Dominic Adams, *State says Flint hasn't applied for permit to use river as drinking water source*, Michigan Live, Mar. 28, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/03/state\\_says\\_flint\\_hasnt\\_applied\\_1.html](http://www.mlive.com/news/flint/index.ssf/2014/03/state_says_flint_hasnt_applied_1.html) (attached as Ex. 56).

Copper Rule.<sup>67</sup> When EPA inquired about what the City was doing to control corrosion, MDEQ falsely stated that the City was already operating an "Optimized Corrosion Control Program."<sup>68</sup> The opposite was true: as the State later admitted, the City had not implemented any corrosion control treatment measures (and still has not done so).<sup>69</sup>

Further, evidence indicates that the City and MDEQ are either unwilling or unable to conduct tap water monitoring for lead in compliance with federal regulations. As discussed above, statements by a Flint Utilities Administrator suggest that the City did not identify a sampling pool prior to conducting monitoring, as federal law expressly requires. Instead, the Department of Public Works "just thr[ew] out bottles everywhere just to collect as many [samples] as we c[ould]."<sup>70</sup> The City even asked its own employees and their "family/friends who live in the city" to participate in the sampling group.<sup>71</sup>

The City also may not have complied with requirements for targeting high-risk homes, including the requirement that 50% of sampled sites contain lead pipes or copper pipes with lead solder.<sup>72</sup> The City's Utilities Administrator conceded that the City was "not really" able to determine that every residence sampled had lead pipes, even though this was what the City affirmatively reported to MDEQ in a monitoring compliance report.<sup>73</sup> Further, the City's monitoring compliance report shows that the City did not meet the deadline to submit its monitoring results and did not comply with the requirement to sample the same sites across monitoring periods.<sup>74</sup> During the January to June 2015 monitoring period, the City initially sought to obtain 100 samples.<sup>75</sup> After the City failed to collect that number, MDEQ decided that only sixty samples were required.<sup>76</sup>

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<sup>67</sup> See 40 C.F.R. § 141.81(a)-(b).

<sup>68</sup> See Email from Stephen Busch, MDEQ, to Jennifer Crooks and Miguel Del Toral, U.S. EPA (Feb. 27, 2015) ("The City of Flint ... [h]as an Optimized Corrosion Control Program[.]") (attached as Ex. 57).

<sup>69</sup> Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015) ("Flint is not currently practicing corrosion control treatment at the [Water Treatment Plant].") (attached as Ex. 58).

<sup>70</sup> See 40 C.F.R. § 141.86(a)(1); *Thirst for Truth: Who's to Blame for Flint Water Crisis?* (ACLU of Michigan, Jul. 28, 2015), available at <https://www.youtube.com/watch?t=9&v=LT09irD2f0Y> (statement of Michael Glasgow, Utilities Administrator).

<sup>71</sup> Email from Michael Glasgow (June 1, 2015) (attached as Ex. 59).

<sup>72</sup> 40 C.F.R. § 141.86(a)(8).

<sup>73</sup> *Thirst for Truth*, supra note 70 (statement of Michael Glasgow, Utilities Administrator, at 5:30-5:45).

<sup>74</sup> City of Flint Water Plant, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Jul. 28, 2015) (checking "no" box in response to question asking whether City used the same sampling sites as the previous monitoring period) (attached as Ex. 60); see 40 C.F.R. §§ 141.86(b)(4); 141.90(a)(1).

<sup>75</sup> See Email from Adam Rosenthal, MDEQ, to Michael Glasgow, Brent Wright, City of Flint (June 25, 2015) (attached as Ex. 61).

<sup>76</sup> Compare *id.* ("We hope you have 61 more lead/copper samples collected and sent to the lab by 6/30/15, and that they will be below the AL for lead. As of now with 39 results,

Compliance with the SDWA's monitoring requirements is critical to accurately assessing the levels of lead in Flint's water, and to ensuring implementation of the drinking water standards set forth in the Lead and Copper Rule. Although the serious apparent flaws in the City's testing procedures call into question whether the City is complying with the SDWA, both the City and MDEQ continue to maintain that Flint's water "is meeting state and federal drinking water standards."<sup>77</sup>

Neither the City nor MDEQ has taken measures to broadly provide an alternative, free source of safe drinking water to residents. Instead, state and local authorities have dismissed citizen concerns about lead in drinking water as "near-hysteri[cal]" and "irresponsible."<sup>78</sup> City officials have encouraged residents to install in-home water filters, flush their taps before using the water, and send their children to school with bottled water, all at the residents' own expense, which is alarming given that there are roughly 14,000 households in Flint with children under 18, and nearly three-quarters of the children in those households receive Supplemental Security Income (SSI), cash public assistance income, or Food Stamp/SNAP benefits.<sup>79</sup> These remedies are inadequate: filters are expensive, may clog quickly, are of varying effectiveness at removing lead, and require

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Flint's 90th percentile is over the AL for lead."), with City of Flint, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply, *supra* note 31, at 1 ("Revised report after conference call with DEQ staff . . . . [D]ue to population the number of samples required was reduced to 60.").

<sup>77</sup> Letter from MDEQ to MI State Senators 2 (Sept. 17, 2015) (attached as Ex. 62); City of Flint, *City of Flint Issues Lead Advisory*, *supra* note 13 ("[T]he City is in full compliance with the Federal Safe Drinking Water Act.").

<sup>78</sup> *Did this Michigan Town Poison its Children?*, U.S. News & World Report, Sept. 24, 2015, <http://www.usnews.com/news/articles/2015/09/25/flint-michigan-children-show-high-levels-of-lead-in-blood> (attached as Ex. 63); Ron Fonger, *Feds sending in experts to help Flint keep lead out of water*, Michigan Live, Sept. 10, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/university\\_researchers\\_dont\\_dr.html](http://www.mlive.com/news/flint/index.ssf/2015/09/university_researchers_dont_dr.html) (attached as Ex. 64). The City's statement that it will "work with [MDEQ] on implementing water optimization measures to reduce the corrosive effects of water on older pipes" by 2016 is a hollow promise given the present and continuing exposure to lead and lead's irreversible effects on human health. Ron Fonger, *Flint will have lead-reduction plan for water system by 2016, officials say*, Michigan Live, Sept. 3, 2015, <http://www.mlive.com/news/flint/index.ssf/2015/09/mayor.html> (attached as Ex. 65).

<sup>79</sup> City of Flint, *City of Flint Issues Lead Advisory*, *supra* note 13; Amanda Emery, *Flint public school students told to bring own water to school*, Michigan Live, Sept. 25, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/flint\\_community\\_schools\\_asks\\_s.html](http://www.mlive.com/news/flint/index.ssf/2015/09/flint_community_schools_asks_s.html) (attached as Ex. 66); see factfinder.census.gov (2010 data) (enter "Flint, MI" in box under "Community Facts," then click "General Population and Housing Characteristics" under "2010 Census") (attached as Ex. 67); 2009-2013 American Community Survey 5-Year Estimates, Children's Characteristics (2013-estimate), factfinder.census.gov (enter "Flint, MI" in box under "Community Facts," then click "Poverty" on left-side bar; then click "Children Characteristics") (attached as Ex. 68).



ongoing maintenance. Pre-flushing is also imperfect, does not always eliminate lead, and may be prohibitively expensive for many families given Flint's high water rates.<sup>80</sup>

The City's and State's apparent lapses in regulatory compliance, and their failure to take responsibility for responding to the City's lead problems, demand federal intervention.

**V. EPA should act immediately to adequately address the public health emergency created by lead in Flint drinking water**

Petitioners urge EPA to take all actions necessary to abate the endangerment presented by lead in Flint's drinking water, and to inform Flint residents about the potential hazards of drinking the City's tap water. At minimum, Petitioners request that EPA:

- Immediately order the City and MDEQ to reconnect Flint's water system with water from the Detroit Water and Sewerage Department. EPA should work with the City of Flint, MDEQ, and the Detroit Water and Sewerage Department to facilitate this renewed connection as soon as possible.
- Immediately provide Flint residents with an alternative, free source of safe drinking water that meets EPA standards. This may include providing customers with free bottled water or providing (and routinely maintaining) free in-home and replacement filters that are certified to remove lead by NSF International.<sup>81</sup>
- Immediately order the City to advise all Flint water customers to avoid consuming unfiltered water from the City's water system. The notice should warn customers not to use unfiltered Flint water to make baby formula or for children. The notice should inform customers that if they have no alternative water source, they should flush Flint water for *a minimum* of five minutes before

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<sup>80</sup> Dominic Adams, *Flint monthly water and sewer bills highest in Genesee County by \$35*, Michigan Live, June 1, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/06/post\\_386.html](http://www.mlive.com/news/flint/index.ssf/2014/06/post_386.html) (citing Flint bills at \$140/month) (attached as Ex. 69). A state-court judge recently ruled that the Emergency Manager's decision to significantly raise water rates was unlawful. Ron Fonger, *Judge orders Flint to cut water rates 30% in sweeping injunction*, Michigan Live, Aug. 7, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/flint\\_ordered\\_to\\_cut\\_water\\_rat.html](http://www.mlive.com/news/flint/index.ssf/2015/08/flint_ordered_to_cut_water_rat.html) (attached as Ex. 70).

<sup>81</sup> See U.S. EPA, Planning for an Emergency Drinking Water Supply (June 2011) (provision of bottled water is a "common federal response" in emergencies) (attached as Ex. 71); cf. 40 C.F.R. § 141.101 (allowing public water systems to use bottled water on a temporary basis "to avoid unreasonable risk to health"); U.S. EPA, Memorandum re: Update on Providing Alternative Water Supply as Part of Superfund Response Actions (Sept. 24, 2010), <http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/610732.pdf> (allowing delivery of bottled water on a temporary basis in certain circumstances in CERCLA removal or remediation actions) (attached as Ex. 72).

use. EPA should prohibit the City from charging water customers for this flushing time.

- Use its authority under 40 C.F.R. §§ 142.19 and 141.82(i) to review MDEQ's determinations concerning corrosion control requirements for the Flint water system, and issue a federal order establishing the optimal corrosion control treatment requirements for the Flint water system and requiring Flint to immediately comply with these requirements.
- Order the City to conduct continued monitoring for lead and copper in six-month periods in accordance with the procedures set forth in 40 C.F.R. § 141.86. EPA should directly oversee the City's monitoring by ordering the City to submit a Quality Assurance Project Plan (QAPP) to ensure that all information, sample collection, analytical data and resulting decisions are technically sound, scientifically valid, and properly administered. EPA must approve the City's QAPP before the City conducts any additional monitoring. EPA should prohibit the City from conducting reduced monitoring under 40 C.F.R. § 141.86(d)(4) for at least five years.
- Order the City to comply with the public education and supplemental monitoring requirements in 40 C.F.R. § 141.85, including but not limited to immediately notifying consumers of the results of tests completed at their homes or places of business, and providing the public education, monitoring, and notification established in those rules.
- Order any other additional relief that EPA determines is "necessary to protect the health" of Flint residents from lead contamination in drinking water.

## **VI. Conclusion**

For the foregoing reasons, Petitioners respectfully request that EPA take the actions necessary to abate the imminent and substantial endangerment to Flint residents' health from lead contamination in their drinking water.

Dated: October 1, 2015

Respectfully Submitted,

/s/ Pastor Allen Overton

Pastor Allen Overton

**COALITION FOR CLEAN WATER**

/s/ Pastor Alfred Harris

Pastor Alfred Harris

**CONCERNED PASTORS FOR SOCIAL ACTION**

2200 Forrest Hill

Flint, Michigan 48504

(810) 394-6787

/s/ Melissa Mays

Melissa Mays

LeeAnne Walters

**WATER YOU FIGHTING FOR**

/s/ Claire McClinton

Claire McClinton

**DEMOCRACY DEFENSE LEAGUE WATER TASK FORCE**

/s/ Marc Edwards

Marc Edwards, CEE

Siddhartha Roy

**FLINT WATER STUDY TEAM**

/s/ Dawn Kettinger

Dawn Kettinger

**MICHIGAN NURSES ASSOCIATION**

/s/ Yvonne M. White

Yvonne M. White

**NAACP - Michigan State Conference**

/s/ Jeffrey L. Edison

Jeffrey L. Edison

**MICHIGAN CHAPTER OF THE NATIONAL  
CONFERENCE OF BLACK LAWYERS**

/s/ Brooke Tucker

Brooke Tucker

Michael Steinberg

**AMERICAN CIVIL LIBERTIES UNION OF MICHIGAN**

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/s/ Dimple Chaudhary

Dimple Chaudhary

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**NATURAL RESOURCES DEFENSE COUNCIL**

20 N. Wacker Drive, Suite 1600

Chicago, IL 60606

(312) 663-9900

**Thelen, Mary Beth (DEQ)**

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**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, October 08, 2015 5:40 PM  
**To:** Scott, Allison (GOV); Muchmore, Dennis (GOV); Agen, Jarrod (GOV); Dickinson, Sarah (GOV); Emmitt, Beth (GOV); Snyder, Rick (GOV)  
**Cc:** Wyant, Dan (DEQ)  
**Subject:** Flint Drinking Water Action Plan Update - FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGED

**Importance:** High

Dear Governor,

Below are our 26 action steps we are working on:

**26 Action Steps for Next Week, October 12-16, 2015**

1. Identify schools and prioritize for assessment
2. Get DLARA plumbers organized
3. Complete sampling instructions
4. MDARD info for restaurants
5. Update 2004 letter to EPA
6. Approve Flint plan for water line
7. Lead education plan for schools for Drinking Water
8. Begin regular meetings with Flint
9. Schedule WTP tour
10. Meet with schools and DLARA-invitation only
11. Update Web page
12. Contact DHHS to see where they are with United Way
13. Circulate protocol draft with EPA
14. Contact City about homeowner sample delivery
15. Communicate to MDARD and City that business samples should be coordinated through lab
16. Figure out number of samples from schools and child care facilities
17. Confirm Lynda Dykema is POC for DHHS
18. Contact KWA to find out if there are any bottlenecks we need to remove
19. Expedite 399 Plan and Phosphate Plan
20. Get update on service line index card conversion and identify where partial replacements exist
21. Make sure DHHS gets info so they can cross reference
22. Legislative contacts
23. Legislative time line and summary
24. Dan reconnect with state superintendent
25. Conduct After Action Plan
26. Change Part 54-Drinking Water Revolving Loan Fund

If you have any questions, please let me know.

Dan Wyant

## **Flint Water Updates**

**October 7, 2015**

I. Filters for Flint

II. DWSD/ City of Flint

III. Staffing needs for Exposure Testing

IV. Testing

V. Announcement

**Thelen, Mary Beth (DEQ)**

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**From:** The Office of Senator Ananich <SenAnanich@senate.michigan.gov>  
**Sent:** Wednesday, October 21, 2015 12:43 PM  
**To:** hedman.susan@epa.gov; mccarthy.gina@epa.gov  
**Cc:** Jordan.Dickinson@mail.house.gov; mayor@cityofflint.com; HCroft@cityofflint.com; poy.thomas@epa.gov; Schock.michael@epa.gov; Lytle.darren@epa.gov; fortin.denise@epa.gov; Wyant, Dan (DEQ); aaron\_suntag@stabenow.senate.gov; Bentley\_Johnson@peters.senate.gov; Davis.CatherineM@epa.gov; repphelps@house.mi.gov; SheldonNeeley@house.mi.gov; **PPI**@michigan.gov  
**Subject:** Letter Requesting EPA Review of Flint, MI Water  
**Attachments:** 2015.10.21 EPA Review Request FINAL.PDF

Administrator McCarthy and Regional Director Hedman,

Please see the attached letter regarding a request for an EPA review of Flint, Michigan's water treatment.

Please do not hesitate to contact my office if you have any questions. Thank you for your time and attention.

Sincerely,

The Office of State Senator Jim Ananich  
Michigan Senate Minority Leader  
District 27



CC: SY90

George K.

Lisa Sheller

Steve Busch

Maggie Pellner

Brad Wunfel

Direct airtel  
that I  
provide you  
a copy.

mlt  
10-23

Orig. ~~Dust~~

SENATE MINORITY LEADER  
**JIM ANANICH**

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 /jimananich  @jimananich

October 21, 2015

Gina McCarthy  
**Administrator**  
United States Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Mail Code 6106A  
Washington, DC 20460

Susan Hedman  
**Regional Administrator**  
United States Environmental Protection Agency Region 5  
Ralph Metcalfe Federal Building  
77 West Jackson Boulevard  
Chicago, IL 60604

**Re: EPA Review Needed on Flint, Michigan Water Treatment**

Administrator McCarthy and Regional Director Hedman,

Today Congressman Dan Kildee requested that the United States Environmental Protection Agency conduct an investigation into the water system in Flint, Michigan. I agree that such an investigation is vital to ensuring that the people responsible for Flint's dangerous water quality are held accountable. Similar to Congressman Kildee's request, I am requesting the EPA conduct a review of the Michigan Department of Environmental Quality's (MDEQ) oversight of water treatment in Flint as provided for in the Lead and Copper Rule, 40 CFR Sec. 141.80.

After decades of relying on water from the Detroit Water and Sewerage Department (DWSD), Flint began treating its own water from the Flint River in April 2014 at the behest of state-appointed Emergency Managers. DWSD had used — and continues to use — anti-corrosion treatments in its water to prevent lead leaching from an aging infrastructure into residents' drinking water. For a number of reasons, raw water from the Flint River is significantly more corrosive than the lake water that DWSD uses. Despite this, Flint chose not to treat the raw Flint River water by any method traditionally associated with preventing lead corrosion. Multiple consultants and the EPA advised the city to use additional corrosion control measures, but that advice went unheeded by the City of Flint and the MDEQ.

Foreseeably, lead has been seeping into Flint's drinking water for more than a year, causing an alarming rise in the number of children in Flint with elevated blood lead levels. Independent research conducted by Virginia Tech professor Marc Edwards indicated high lead levels in tap water, and a study led by Hurley Medical Center pediatrician Dr. Mona Hanna-Attisha revealed that in high-risk areas of the city, the rate of lead overexposure among children more than doubled since switching water sources. State data have confirmed these results.

Additionally, several questions remain regarding how Flint and state officials conducted water sampling under the Lead and Copper Rule. Allegedly, officials did not target samples in high-risk Tier 1 locations or repeat locations in subsequent tests. Consumers were also instructed to pre-flush their taps prior to collecting samples, resulting in lower lead level results. It is unclear whether a sufficient number of samples were taken or why MDEQ excluded two high lead level samples from Flint's July 2015 water quality report.



SENATE MINORITY LEADER  
**JIM ANANICH**

(517) 373-0142  
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 /jmananich  @jmananich

The State of Michigan has pledged to help reconnect the City of Flint to DWSD and take additional steps to help remediate the lead problem. However, these are stopgap measures that will never undo the damage already done.

Ultimately, the EPA retains the ability and responsibility to oversee the state's efforts to obtain and maintain safe drinking water for its residents. As such, I appreciate that the EPA has established the Flint Safe Drinking Water Task Force. However, it also is within the EPA's power to review the actions of MDEQ and the City of Flint as they pertain to lead testing and treatment under the Lead and Copper Rule. We want to ensure Flint remains compliant once it switches its permanent water source to the Karegnondi Water Authority.

I respectfully request that, under 40 CFR Sec. 142.19, Regional Administrator Hedman review MDEQ's determinations regarding corrosion control for lead in Flint, Michigan. Regardless of the findings, I am also requesting that Regional Administrator Hedman make public all evidence gathered during the course of that review. Michigan citizens deserve to know whether MDEQ is operating safely and effectively.

If you have any questions, please contact my office at [senjananich@senate.mi.gov](mailto:senjananich@senate.mi.gov) or (517) 373-0142. Thank you for your consideration.

Sincerely,



Jim Ananich  
Senate Democratic Leader  
District 27

cc:

Governor Rick Snyder  
U.S. Representative Dan Kildee  
U.S. Senator Debbie Stabenow  
U.S. Senator Gary Peters  
State Representative Sheldon Neeley, District 34  
State Representative Phil Phelps, District 49  
Mayor Dayne Walling, City of Flint  
Howard Croft, City of Flint  
Susan Hedman, EPA  
Thomas Poy, EPA  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD  
Denise Fortin, EPA  
Dan Wyant, MDEQ  
Liane Shekter-Smith, MDEQ  
Pat Cook, MDEQ  
Stephen Busch, MDEQ  
Brad Wurfel, MDEQ  
Marc Edwards, Virginia Tech

**Thelen, Mary Beth (DEQ)**

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**From:** The Office of Senator Ananich <SenAnanich@senate.michigan.gov>  
**Sent:** Wednesday, October 21, 2015 12:43 PM  
**To:** hedman.susan@epa.gov; mccarthy.gina@epa.gov  
**Cc:** Jordan.Dickinson@mail.house.gov; mayor@cityofflint.com; HCroft@cityofflint.com; poy.thomas@epa.gov; Schock.michael@epa.gov; Lytle.darren@epa.gov; fortin.denise@epa.gov; Wyant, Dan (DEQ); aaron\_suntag@stabenow.senate.gov; Bentley.Johnson@peters.senate.gov; Davis.CatherineM@epa.gov; repphelps@house.mi.gov; SheldonNeeley@house.mi.gov; PPI@michigan.gov  
**Subject:** Letter Requesting EPA Review of Flint, MI Water  
**Attachments:** 2015.10.21 EPA Review Request FINAL.PDF

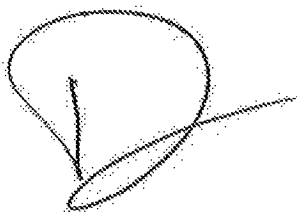
Administrator McCarthy and Regional Director Hedman,

Please see the attached letter regarding a request for an EPA review of Flint, Michigan's water treatment.

Please do not hesitate to contact my office if you have any questions. Thank you for your time and attention.

Sincerely,

The Office of State Senator Jim Ananich  
Michigan Senate Minority Leader  
District 27



cc:

Mays E



FGI

10-23

orig: 2-2 EPA File  
cc: 3-1 MI Log File  
cc: Director

SENATE MINORITY LEADER  
**JIM ANANICH**

☎ 517.373.0412  
✉ [senjananich@senate.michigan.gov](mailto:senjananich@senate.michigan.gov)  
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October 21, 2015

Gina McCarthy  
**Administrator**  
United States Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Mail Code 6106A  
Washington, DC 20460

Susan Hedman  
**Regional Administrator**  
United States Environmental Protection Agency Region 5  
Ralph Metcalfe Federal Building  
77 West Jackson Boulevard  
Chicago, IL 60604

**Re: EPA Review Needed on Flint, Michigan Water Treatment**

Administrator McCarthy and Regional Director Hedman,

Today Congressman Dan Kildee requested that the United States Environmental Protection Agency conduct an investigation into the water system in Flint, Michigan. I agree that such an investigation is vital to ensuring that the people responsible for Flint's dangerous water quality are held accountable. Similar to Congressman Kildee's request, I am requesting the EPA conduct a review of the Michigan Department of Environmental Quality's (MDEQ) oversight of water treatment in Flint as provided for in the Lead and Copper Rule, 40 CFR Sec. 141.80.

After decades of relying on water from the Detroit Water and Sewerage Department (DWSD), Flint began treating its own water from the Flint River in April 2014 at the behest of state-appointed Emergency Managers. DWSD had used — and continues to use — anti-corrosion treatments in its water to prevent lead leaching from an aging infrastructure into residents' drinking water. For a number of reasons, raw water from the Flint River is significantly more corrosive than the lake water that DWSD uses. Despite this, Flint chose not to treat the raw Flint River water by any method traditionally associated with preventing lead corrosion. Multiple consultants and the EPA advised the city to use additional corrosion control measures, but that advice went unheeded by the City of Flint and the MDEQ.

Foreseeably, lead has been seeping into Flint's drinking water for more than a year, causing an alarming rise in the number of children in Flint with elevated blood lead levels. Independent research conducted by Virginia Tech professor Marc Edwards indicated high lead levels in tap water, and a study led by Hurley Medical Center pediatrician Dr. Mona Hanna-Attisha revealed that in high-risk areas of the city, the rate of lead overexposure among children more than doubled since switching water sources. State data have confirmed these results.

Additionally, several questions remain regarding how Flint and state officials conducted water sampling under the Lead and Copper Rule. Allegedly, officials did not target samples in high-risk Tier 1 locations or repeat locations in subsequent tests. Consumers were also instructed to pre-flush their taps prior to collecting samples, resulting in lower lead level results. It is unclear whether a sufficient number of samples were taken or why MDEQ excluded two high lead level samples from Flint's July 2015 water quality report.

SENATE MINORITY LEADER  
**JIM ANANICH**

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🌐 [senatedems.com/van/anich](http://senatedems.com/van/anich)



The State of Michigan has pledged to help reconnect the City of Flint to DWSD and take additional steps to help remediate the lead problem. However, these are stopgap measures that will never undo the damage already done.

Ultimately, the EPA retains the ability and responsibility to oversee the state's efforts to obtain and maintain safe drinking water for its residents. As such, I appreciate that the EPA has established the Flint Safe Drinking Water Task Force. However, it also is within the EPA's power to review the actions of MDEQ and the City of Flint as they pertain to lead testing and treatment under the Lead and Copper Rule. We want to ensure Flint remains compliant once it switches its permanent water source to the Karegnondi Water Authority.

I respectfully request that, under 40 CFR Sec. 142.19, Regional Administrator Hedman review MDEQ's determinations regarding corrosion control for lead in Flint, Michigan. Regardless of the findings, I am also requesting that Regional Administrator Hedman make public all evidence gathered during the course of that review. Michigan citizens deserve to know whether MDEQ is operating safely and effectively.

If you have any questions, please contact my office at [senjananich@senate.mi.gov](mailto:senjananich@senate.mi.gov) or (517) 373-0142. Thank you for your consideration.

Sincerely,

Jim Ananich  
Senate Democratic Leader  
District 27

cc:

Governor Rick Snyder  
U.S. Representative Dan Kildee  
U.S. Senator Debbie Stabenow  
U.S. Senator Gary Peters  
State Representative Sheldon Neeley, District 34  
State Representative Phil Phelps, District 49  
Mayor Dayne Walling, City of Flint  
Howard Croft, City of Flint  
Susan Hedman, EPA  
Thomas Poy, EPA  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD  
Denise Fortin, EPA  
Dan Wyant, MDEQ  
Liane Shekter-Smith, MDEQ  
Pat Cook, MDEQ  
Stephen Busch, MDEQ  
Brad Wurfel, MDEQ  
Marc Edwards, Virginia Tech

**Thelen, Mary Beth (DEQ)**

---

**From:** The Office of Senator Ananich <SenJAnanich@senate.michigan.gov>  
**Sent:** Tuesday, October 20, 2015 12:38 PM  
**To:** Miller, Kelly C. (OAG); Ringler, Doug (OAG)  
**Cc:** Jordan.Dickinson@mail.house.gov; mayor@cityofflint.com; HCroft@cityofflint.com; hedman.susan@epa.gov; poy.thomas@epa.gov; Schock.michael@epa.gov; Lytle.darren@epa.gov; fortin.denise@epa.gov; Cook, Pat (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Edwardsm@vt.edu; Wyant, Dan (DEQ); Sygo, Jim (DEQ)  
**Subject:** Letter Regarding ODWMA Audit  
**Attachments:** 10.20.2015-Letter-Ananich-AG-Ringler-FINAL.PDF

Auditor General Ringler,

Please see the attached letter regarding an audit of the Office of Drinking Water and Municipal Assistance (ODWMA).

Please do not hesitate to contact my office if you have any questions. Thank you for your time and attention.

Sincerely,

The Office of State Senator Jim Ananich  
Senate Minority Leader  
District 27

Director  
FUI



MA [Signature]

SENATE MINORITY LEADER  
**JIM ANANICH**

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🌐 [senatedems.com/jananich](http://senatedems.com/jananich)

October 20, 2015

Doug Ringler, CPA, CIA  
**Auditor General**  
201 North Washington Square, 6<sup>th</sup> Floor  
Lansing, MI 48913

Auditor General Ringler,

It has come to my attention that the Office of the Auditor General is conducting an audit of the Office of Drinking Water and Municipal Assistance (ODWMA). This audit will assess the sufficiency of ODWMA's oversight of the State's drinking water and environmental health programs. As you may know, recently independent research by physicians and water quality experts verified that the City of Flint's drinking water contains hazardous levels of lead. This lead contamination is dangerous for all Flint's residents, but it is especially dangerous for the young children who live there.

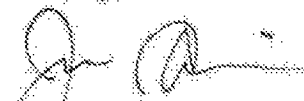
I'm hoping the audit of ODWMA will answer the following questions:

- How does ODWMA ensure the data they receive is accurate?
- What accountability measures are in place for ODWMA staff who fail to follow data verification protocols?
- What accountability measures are in place for ODWMA staff who lie or misrepresent information to the Environmental Protection Agency?
- What policies do ODWMA and the Michigan Department of Environmental Quality (MDEQ) have in place to escalate major infractions up the chain of command?

Please ensure that these questions are answered by this audit so I can determine what legislative steps may be necessary to strengthen transparency and accountability within ODWMA.

Thank you for your consideration of this matter.

Sincerely,



Jim Ananich  
Senate Democratic Leader  
District 27

SENATE MINORITY LEADER  
**JIM ANANICH**

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cc:

U.S. Representative Dan Kildee  
Mayor Dayne Walling, City of Flint  
Howard Croft, City of Flint  
Susan Hedman, EPA  
Thomas Poy, EPA  
Michael Schock, EPA-ORD  
Darren Lytle, EPA-ORD  
Denise Fortin, EPA  
Dan Wyant, EPA  
Jim Sygo, MDEQ  
Pat Cook, MDEQ  
Stephen Busch, MDEQ  
Brad Wurfel, MDEQ  
Marc Edwards, Virginia Tech



TF

Flint

# Letter Buckslip

12-Oct-15

ID:	DIR00177	Deputy Director _____ Deputy's Mgmt. Asst. _____ Director's Office Staff _____ Division/Office Chief _____ Division/Office Chief's Mgmt. Asst. _____ Prepared by: _____ Division/Office _____ Exec. Div. File No. _____ If Delegated _____
Date of letter:	10/1/2015	
Date received:	10/2/2015	
Date due:	10/19/2015	
Reply date:		
Last name:	Tallman	
First name:	Sarah C.	
Organization:	Natural Resources Defense Council	
Subject:	Petition for Emergency Action under the Safe Drinking Water Act to Abate the Imminent and Substantial Endangerment to Flint, Michigan Residents	
Reply to:		
Author:		
Owner:	OLSZEWSKIR	

Action	Action Date	Due Date	Entity	Signature	Owner	CCs
Assigned 1	10/12/2015	10/19/2015	EXE	HAA	OLSZEWSKIR	Thelen Sygo Shekter Smith Devereaux Manning/Hart File 2-2 EPA

Comments: Original to EXE (Jim Sygo)

Jim Sygo to discuss with AG's office and ODWMA. Disc w/exhibits went to Sygo. Mbt



DIR 00177

NATURAL RESOURCES DEFENSE COUNCIL

October 1, 2015

**Via FedEx**

Dan Wyant, Director  
Michigan Department of Environmental Quality  
Executive Division  
P.O. Box 30473  
Lansing, MI 48909-7973

Re: *Petition for Emergency Action under the Safe Drinking Water Act to  
Abate the Imminent and Substantial Endangerment to Flint, Michigan  
Residents*

Director Wyant:

Enclosed please find a Petition for Emergency Action under Section 1431 of the Safe Drinking Water Act to abate the imminent and substantial endangerment to Flint, Michigan residents from lead contamination in their drinking water, served on EPA Administrator McCarthy today. I have also enclosed a CD containing the exhibits to the Petition.

Regards,



Sarah C. Tallman  
Natural Resources Defense Council  
20 N. Wacker Drive, Suite 1600  
Chicago, IL 60622  
(312) 651-7918  
stallman@nrdc.org

Enclosure

**BEFORE THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

---

Petition for Emergency Action under the Safe Drinking Water Act, 42 U.S.C. § 300i, to Abate  
the Imminent and Substantial Endangerment to Flint, Michigan Residents from Lead  
Contamination in Drinking Water

---

**Submitted on Behalf of Petitioners Coalition for Clean Water, Concerned Pastors for  
Social Action, Water You Fighting For, Democracy Defense League Water Task Force,  
Flint Water Study Team, Michigan Nurses Association, NAACP – Michigan State  
Conference, Michigan Chapter of the National Conference of Black Lawyers, American  
Civil Liberties Union of Michigan, and the Natural Resources Defense Council**

October 1, 2015

**Notice of Petition**

Gina McCarthy  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Mail Code: 1101A  
Washington, DC 20460

Susan Hedman  
Regional Administrator  
U.S. Environmental Protection Agency Region 5  
77 West Jackson Boulevard  
Mail Code: R-19J  
Chicago, IL 60604-3507

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1. Dominic Adams, *Closing the valve on history: Flint cuts water flow from Detroit after nearly 50 years*, Michigan Live (Apr. 25, 2014)
2. Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Department (Mar. 7, 2014)
3. Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation (July 16, 2015)
4. Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post (July 10, 2015)
5. Laura Gottesdiener, *Flint, Mich., Residents find state water control hard to swallow*, Al Jazeera America (Apr. 3, 2015)
6. Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live (Sept. 5, 2014)
7. Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press (Jan. 23, 2015)
8. Michigan Department of Environmental Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014)
9. U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water
10. Order Den. Mot. for Prelim. Inj. 1, *Coalition for Clean Water v. City of Flint*, No. 15-cv-12084 (E.D. Mich. June 23, 2015)
11. Marc Edwards, *Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015)
12. Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015)
13. Brianna Owczarzak, *GM says no to Flint water*, WNEM (Oct. 14, 2014)
14. U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013)
15. U.S. EPA, Basic Information About Lead in Drinking Water (last updated June 26, 2015)
16. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015)

17. City of Flint, City of Flint Issues Lead Advisory (Sept. 25, 2015)
18. H.R. Rep. No. 93-1185, 1974 U.S.C.C.A.N. 6454, 6487 (1974); *In re Yakima Valley Dairies*, Admin. Order on Consent (U.S. EPA Region 10, Mar. 5, 2013)
19. Complaint, *Coalition for Clean Water v. City of Flint*, No. 104900-cz (Mich. Cir. Ct. June 5, 2015)
20. Ron Fonger, *Groups collect 26,000 signatures to end use of Flint River for Water*, Michigan Live (Aug. 31, 2015)
21. Ron Fonger, *Flint mayor accepts petitions but not call to end use of Flint River*, Michigan Live (Aug. 31, 2015)
22. William E. Ketchum III, *People take to streets to protest Flint water quality*, Michigan Live (Feb. 14, 2015)
23. AP, *Flint city councilman: 'We got bad water,'* Detroit Free Press (Jan. 14, 2015)
24. Letter from Jim Ananich, Mich. Sen. Minority Leader and Sheldon Neeley, Phil Phelps, Mich. State Representatives, to Dan Wyant, MDEQ (Sept. 10, 2015)
25. Letter from U.S. Representative Dan Kildee, U.S. Representative, to Administrator Gina McCarthy, U.S. EPA, & Director Dan Wyant, MDEQ (Sept. 9, 2015)
26. *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study (Sept. 16, 2015)
27. Siddhartha Roy, *Flint Water Study Updates for the Citizens of Flint* (Sept. 15, 2015)
28. Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live (Sept. 15, 2015)
29. *Lead testing results for water sampled by residents*, Flint Water Study (last visited Sept. 28, 2015)
30. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (Mar. 18, 2015)
31. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (June 4, 2015)
32. Consumer Notice of Lead & Copper Results in Drinking Water (Feb. 18, 2015)
33. Mich. Dep't of Env'tl. Quality, *Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply* (Aug. 20, 2015)
34. Drinking Water Lead & Copper Sampling Instructions

35. Memorandum from Miguel A. Del Toral, Regulations Mgmt., Ground Water and Drinking Water Branch, U.S. EPA Region 5, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, U.S. EPA Region 5, re High Levels in Flint, Michigan—Interim Report 2 (June 24, 2015)
36. U.S. EPA, Lead and Copper Rules Monitoring and Reporting Guidance for Public Water Systems 28 (Mar. 2010)
37. Letter from Cynthia C. Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008)
38. MDEQ, Frequently Asked Questions: Water Lead Levels in the City of Flint (Sept. 2015)
39. Centers for Disease Control and Prevention, Preventing Lead Poisoning in Your Children: Chapter 2 (Oct. 1991)
40. Centers for Disease Control and Prevention, *What Do Parents Need to Know to Protect Their Children?* (last updated June 19, 2014)
41. Centers for Disease Control and Prevention, National Biomonitoring Program, Factsheet: Lead (last updated Jul. 12, 2013)
42. U.S. EPA, Lead and Copper Rule: A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act (Oct. 2005)
43. Lead in Drinking Water, Wisc. Dep't of Nat. Res. (2008)
44. Michael Shannon & John W. Graef, *Lead Intoxication: From Lead-contaminated Water Used to Reconstitute Infant Formula*, 28 Clinical Pediatrics (8) (1989)
45. Ronnie Levin, et al., *Lead Exposures in U.S. Children, 2008: Implications for Prevention*, 116 Environ. Health Perspect. (1) (2008)
46. CDC, *Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water—District of Columbia, 2004*, 53 MMWR Weekly 268 (Apr. 2, 2004)
47. Marc Edwards, *Fetal Death and Reduced Birth Rates Associated with Exposure to Lead-Contaminated Drinking Water*, 48 Env'tl. Sci. & Tech. 739 (2013)
48. Email from Jennifer Crooks, U.S. EPA, to Mike Prysby (Feb. 26, 2015)
49. Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community (PowerPoint Presentation)

50. Kristi Tanner & Nancy Kaffer, *State data confirms higher blood-lead levels in Flint kids*, Detroit Free Press (Sept. 29, 2015)
51. Centers for Disease Control and Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013)
52. American FactFinder, 2009-2013 American Community Survey 5-year Estimates, Flint, Michigan and State of Michigan
53. American Cancer Society, *Lead, Lead in the Environment* (last updated May 27, 2014)
54. 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 2013)
55. CPSC, *CPSC Announces Final Ban on Lead-Containing Paint* (Sept. 2, 1977)
56. Dominic Adams, *State says Flint hasn't applied for permit to use river as drinking water source*, Michigan Live (Mar. 28, 2014)
57. Email from Stephen Busch, MDEQ, to Jennifer Crooks and Miguel Del Toral, U.S. EPA (Feb. 27, 2015)
58. Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015)
59. Email from Michael Glasgow (June 1, 2015)
60. City of Flint Water Plant, *Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply* (Jul. 28, 2015)
61. Email from Adam Rosenthal, MDEQ, to Michael Glasgow, Brent Wright, City of Flint (June 25, 2015)
62. Letter from MDEQ to MI State Senators (Sept. 17, 2015)
63. *Did this Michigan Town Poison its Children?*, U.S. News & World Report (Sept. 24, 2015)
64. Ron Fonger, *Feds sending in experts to help Flint keep lead out of water*, Michigan Live (Sept. 10, 2015)
65. Ron Fonger, *Flint will have lead-reduction plan for water system by 2016, officials say*, Michigan Live (Sept. 3, 2015)
66. Amanda Emery, *Flint public school students told to bring own water to school*, Michigan Live (Sept. 25, 2015)

67. U.S. Census Bureau, American FactFinder, 2010 Demographic Profile Data, Flint Michigan
68. 2009-2013 American Community Survey 5-Year Estimates, Children's Characteristics, Flint, Michigan
69. Dominic Adams, *Flint monthly water and sewer bills highest in Genesee County by \$35*, Michigan Live (June 1, 2014)
70. Ron Fonger, *Judge orders Flint to cut water rates 35 percent in sweeping injunction*, Michigan Live (Aug. 7, 2015).
71. U.S. EPA, Planning for an Emergency Drinking Water Supply (June 2011)
72. U.S. EPA, Memorandum re: Update on Providing Alternative Water Supply as Part of Superfund Response Actions (Sept. 24, 2010)



The residents of Flint, Michigan have been and continue to be exposed to dangerous levels of lead in their drinking water. Monitoring results confirm that, in many instances, these levels are well above the threshold set by the U.S. Environmental Protection Agency (EPA) that triggers mandatory corrective action by public water systems. The City of Flint and the Michigan Department of Environmental Quality (MDEQ) have failed to address this public health crisis, despite their awareness of these monitoring results and data showing increasing blood lead levels in children residing in Flint.

The Coalition for Clean Water, Concerned Pastors for Social Action, Water You Fighting For, Democracy Defense League Water Task Force, Flint Water Study Team, Michigan Nurses Association, NAACP – Michigan State Conference, Michigan Chapter of the National Conference of Black Lawyers, American Civil Liberties Union of Michigan, and Natural Resources Defense Council (collectively, Petitioners) petition EPA to use its emergency powers under the Safe Drinking Water Act (SDWA or the Act), 42 U.S.C. § 300i, to take action to abate the imminent and substantial endangerment to human health caused by lead contamination in Flint's drinking water. As Petitioners demonstrate below, this contamination meets the SDWA requirements for immediate action by EPA and requires a comprehensive federal response.

## **I. Background**

Water-quality problems have plagued Flint's water system since at least April 2014, when the City began using the Flint River as its water source after deciding not to continue purchasing water from Lake Huron through the Detroit Water and Sewerage Department, as it had done for nearly fifty years.<sup>1</sup> In the eighteen months since the switch to Flint River water, the City's drinking water has been at times discolored, foul smelling, and "laden with sediments."<sup>2</sup> Residents report that they have experienced hair loss, skin rashes, and vomiting after drinking the water.<sup>3</sup> In the summer of 2014, the City was forced to issue several boil-water notices after tap water tested positive for total coliform bacteria, which

---

<sup>1</sup> See Dominic Adams, *Closing the valve on history: Flint cuts water flow from Detroit after nearly 50 years*, Michigan Live, Apr. 25, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/04/closing\\_the\\_valve\\_on\\_history\\_f.html](http://www.mlive.com/news/flint/index.ssf/2014/04/closing_the_valve_on_history_f.html) (attached as Ex. 1); Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Dep't (Mar. 7, 2014) (explaining that the City "has actively pursued using the Flint River as a temporary water source" instead of accepting Detroit's offer to "provide[] Flint with the option of continuing to purchase water from DWSD") (attached as Ex. 2).

<sup>2</sup> See Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation, July 16, 2015, <http://www.thenation.com/article/in-flint-michigan-overpriced-water-is-causing-peoples-skin-to-erupt-and-hair-to-fall-out/> (attached as Ex. 3); Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post, July 10, 2015, [http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues\\_b\\_7765132.html](http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues_b_7765132.html) (attached as Ex. 4).

<sup>3</sup> Laura Gottesdiener, *Flint, Mich., Residents find state water control hard to swallow*, Al Jazeera America, Apr. 3, 2015, <http://america.aljazeera.com/articles/2015/4/3/flint-residents-find-state-water-control-hard-to-swallow.html> (attached as Ex. 5).

suggested a possible "pathway for pathogens and fecal contamination" to enter the water system.<sup>4</sup>

The City's subsequent treatment of the water to kill disease-carrying pathogens resulted in elevated levels of total trihalomethanes (TTHM), a byproduct of disinfection.<sup>5</sup> Drinking water with TTHM levels that exceed the federal limit can cause "liver, kidney, or central nervous system problems and increased risk of cancer."<sup>6</sup> In response to the City's water problems, local hospitals, schools, and museums began using bottled water instead of tap water.<sup>7</sup> Some grocery stores reduced the price of bottled water and "sponsored community giveaways of bottled water to low income residents."<sup>8</sup>

Flint River water is also highly corrosive, causing dangerous amounts of lead to leach out of pipes and into the City's water system.<sup>9</sup> Recent sampling has shown that lead is present in Flint's water system at levels well above 15 parts per billion (ppb), the "action level" for lead under the SDWA.<sup>10</sup> These high lead levels put residents at risk of increased lead exposure, which can cause a broad array of serious, irreversible health effects, including cognitive impairment, decreased red blood cell survival, kidney damage, coronary heart disease, and impaired reproductive function.<sup>11</sup>

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<sup>4</sup> Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live, Sept. 5, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/09/flint\\_issues\\_boil\\_water\\_adviso.html](http://www.mlive.com/news/flint/index.ssf/2014/09/flint_issues_boil_water_adviso.html) (attached as Ex. 6).

<sup>5</sup> Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press, Jan. 23, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/22/water-woes-latest-hit-flint/22193291/> (attached as Ex. 7); Mich. Dep't of Env'tl. Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014) (attached as Ex. 8).

<sup>6</sup> U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm> (last updated Dec. 13, 2013) (attached as Ex. 9); see 40 C.F.R. § 141.64(b).

<sup>7</sup> Order Den. Mot. for Prelim. Inj. 1, *Coalition for Clean Water v. City of Flint*, No. 15-cv-12084 (E.D. Mich. June 23, 2015), ECF No. 6 (attached as Ex. 10).

<sup>8</sup> *Id.*

<sup>9</sup> Marc Edwards, *Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015), <http://flintwaterstudy.org/2015/09/test-update-flint-river-water-19x-more-corrosive-than-detroit-water-for-lead-solder-now-what/> (attached as Ex. 11); Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015), <http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/> (attached as Ex. 12). The river water is so corrosive that in October 2014, a local GM engine plant decided to switch back to Lake Huron water to avoid damage to equipment at the plant from corrosion. Brianna Owczarzak, *GM says no to Flint water*, WNEM, Oct. 14, 2014, <http://www.wnem.com/story/26785625/gm-says-no-to-flint-water> (attached as Ex. 13).

<sup>10</sup> 40 C.F.R. § 141.80(c)(1).

<sup>11</sup> See, e.g., U.S. EPA, Integrated Science Assessment for Lead tblES-1 (June 2013) (attached as Ex. 14) (summarizing health effects of lead exposure); U.S. EPA, Basic

The City of Flint and the Michigan Department of Environmental Quality (MDEQ) have been aware of independent monitoring results showing exceedingly high lead levels in the City's drinking water for months.<sup>12</sup> Despite increasing public concern about the safety of the City's drinking water, neither the City nor MDEQ has taken the actions necessary to meaningfully address the problem. The City has not implemented *any* measures to treat the highly corrosive Flint River water to reduce the amount of lead leaching from service pipes.<sup>13</sup> And MDEQ refuses to use its enforcement authority under the SDWA or state law to require Flint to employ corrosion control measures or provide alternative safe water supplies.<sup>14</sup>

When state and local authorities fail to adequately address a public health crisis, the SDWA empowers EPA to act. Section 1431 of the Act vests EPA with broad emergency authority to address endangerments to public health from contaminated drinking water. The EPA Administrator may use these emergency powers "upon receipt of information that a contaminant which is present in or is likely to enter a public water system . . . may present an imminent and substantial endangerment to the health of persons, and that appropriate State and local authorities have not acted to protect the health of such persons."<sup>15</sup> Once the Administrator receives this information, she may "take such actions as [s]he may deem necessary in order to protect [public] health."<sup>16</sup> These actions "may include (but shall not be limited to) . . . issuing such orders as may be necessary to protect the health of persons who are or may be users of such system (including travelers), including

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Information About Lead in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm> (last updated June 26, 2015) (explaining that "[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development," and that "[a]dults who drink this water over many years could develop kidney problems or high blood pressure") (attached as Ex. 15); *see also* National Ambient Air Quality Standards for Lead, 80 Fed. Reg. 278, 290 (Jan. 5, 2015).

<sup>12</sup> *See, e.g.*, Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015) (describing "[b]ig worries" for high lead test results at a Flint resident's home) (attached as Ex. 16).

<sup>13</sup> The City's plan to implement corrosion control measures within thirty to sixty days is inadequate to address the ongoing endangerment. *See* City of Flint, City of Flint Issues Lead Advisory (Sept. 25, 2015), <https://www.cityofflint.com/2015/09/25/city-of-flint-issues-lead-advisory/> (attached as Ex. 17).

<sup>14</sup> *See* Mich. Comp. Laws Ann. §§ 325.1015(1) ("When considered necessary for protection of the public health, the department shall notify a supplier of water of the need to make changes in operations, to provide treatment, [or] to make structural changes in existing systems . . . as necessary to produce and distribute an adequate quantity of water meeting the state drinking water standards."), (3) ("If a public water supply poses an imminent hazard to the public health, the department may issue an emergency order immediately, . . . requiring such action as the department determines is necessary to protect the public health.").

<sup>15</sup> 42 U.S.C. § 300i(a).

<sup>16</sup> *Id.*

orders requiring the provision of alternative water supplies by persons who caused or contributed to the endangerment."<sup>17</sup> EPA has, in the past, used its emergency powers to issue orders to provide alternative safe water sources to community members, require public notice of the drinking water hazard, require contributors to the hazard to treat or otherwise mitigate the hazardous conditions, and require additional monitoring and data-collection activities.<sup>18</sup>

As Petitioners demonstrate below, the lead contamination in Flint's drinking water meets the prerequisites that authorize EPA to take emergency action under the SDWA.

## II. Interests of Petitioners

Petitioners are community groups and advocacy organizations seeking safe and clean water for all residents in Flint. For instance, the Coalition for Clean Water (Coalition), which includes Concerned Pastors for Social Action, Water You Fighting For, and Democracy Defense League Water Task Force, among other community members, has urged city and state officials for months to address Flint's water-quality problems. The Coalition filed a lawsuit in June 2015 in the Circuit Court for the County of Genesee seeking declaratory, injunctive, and other relief relating to Flint's water-quality problems.<sup>19</sup> In August 2015, Food and Water Watch, Water You Fighting For, and the Coalition for Clean Water collected more than 26,000 signatures on a petition to Mayor Dayne Walling asking the City to end its use of the Flint River as a drinking water source.<sup>20</sup> Community members have also organized marches<sup>21</sup> and met with City Council<sup>22</sup> to raise concerns about the quality of Flint's drinking water. These advocacy activities fueled awareness and concern

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<sup>17</sup> *Id.*

<sup>18</sup> See H.R. Rep. No. 93-1185, 1974 U.S.C.C.A.N. 6454, 6487 (1974); *In re Yakima Valley Dairies*, Admin. Order on Consent (U.S. EPA Region 10, Mar. 5, 2013), [http://www.epa.gov/region10/pdf/sites/yakimagw/consent\\_order\\_yakima\\_valley\\_dairies\\_march2013.pdf](http://www.epa.gov/region10/pdf/sites/yakimagw/consent_order_yakima_valley_dairies_march2013.pdf) (attached as Ex. 18).

<sup>19</sup> Compl., *Coalition for Clean Water v. City of Flint*, No. 104900-cz (Mich. Cir. Ct. June 5, 2015) (attached as Ex. 19).

<sup>20</sup> Ron Fonger, *Groups collect 26,000 signatures to end use of Flint River for Water*, Michigan Live, Aug. 31, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/groups\\_delivering\\_26000\\_signat.html#incart\\_river](http://www.mlive.com/news/flint/index.ssf/2015/08/groups_delivering_26000_signat.html#incart_river) (attached as Ex. 20); Ron Fonger, *Flint mayor accepts petitions but not call to end use of Flint River*, Michigan Live, Aug. 31, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/flint\\_mayor\\_accepts\\_petitions.html](http://www.mlive.com/news/flint/index.ssf/2015/08/flint_mayor_accepts_petitions.html) (attached as Ex. 21).

<sup>21</sup> William E. Ketchum III, *People take to streets to protest Flint water quality*, Michigan Live, Feb. 14, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/02/flint\\_residents\\_protest\\_citys.html](http://www.mlive.com/news/flint/index.ssf/2015/02/flint_residents_protest_citys.html) (attached as Ex. 22).

<sup>22</sup> AP, *Flint city councilman: 'We got bad water,'* Detroit Free Press, Jan. 14, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/14/flint-water-resident-complaints/21743465/> (attached as Ex. 23).

among residents and some elected officials in Flint,<sup>23</sup> but have not resulted in any comprehensive action by the City or the State.

**III. Lead present in and likely to continue to enter Flint's water system presents an imminent and substantial endangerment to human health**

**A. Lead is present in and likely to continue to enter Flint's water system**

Flint's residents face ongoing endangerment from lead in their drinking water. Recent sampling data show that dangerously high levels of lead are present in and will likely continue to enter Flint's water system.<sup>24</sup> In August and September 2015, Dr. Marc Edwards, a water resources engineering professor at Virginia Tech, tested 252 drinking water samples collected from Flint residences. Edwards found that *ten percent* of these samples had lead levels of 25 ppb or more, substantially in excess of the federal action level of 15 ppb.<sup>25</sup> Several samples exceeded 100 ppb, and one sample exceeded 1000 ppb.<sup>26</sup> Edwards' sampling data show that lead—a contaminant under the SDWA<sup>27</sup>—is present in Flint's water system.

The results of Edwards' testing are even more concerning because the sampling did not target high-risk residences, as the City is required to do under the Lead and Copper Rule.<sup>28</sup> Because lead levels in a water system are not evenly distributed, EPA requires monitoring for lead under the SDWA to target high-risk residences, "to better ensure that high levels of lead are detected and that the system institutes treatment that provides

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<sup>23</sup> See Letter from Jim Ananich, Mich. Sen. Minority Leader and Sheldon Neeley, Phil Phelps, Mich. State Representatives, to Dan Wyant, MDEQ (Sept. 10, 2015) (attached as Ex. 24); Letter from U.S. Representative Dan Kildee, U.S. Representative, to Adm'r Gina McCarthy, U.S. EPA, and Director Dan Wyant, MDEQ (Sept. 9, 2015) (attached as Ex. 25).

<sup>24</sup> Flint's water system is a "public water system" for purposes of the SDWA because it provides water for human consumption to more than twenty-five individuals. 42 U.S.C. § 300f(4).

<sup>25</sup> *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study (Sept. 16, 2015), <http://flintwaterstudy.org/2015/09/distribution-of-lead-results-across-flint-by-ward-and-zip-codes/> (attached as Ex. 26); Siddhartha Roy, *Flint Water Study Updates for the Citizens of Flint* (Sept. 15, 2015) (attached as Ex. 27); Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live, Sept. 15, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/virginia\\_tech\\_researcher\\_says.html](http://www.mlive.com/news/flint/index.ssf/2015/09/virginia_tech_researcher_says.html) (attached as Ex. 28).

<sup>26</sup> *Lead testing results for water sampled by residents*, Flint Water Study, <http://flintwaterstudy.org/information-for-flint-residents/results-for-citizen-testing-for-lead-300-kits/> (attached as Ex. 29).

<sup>27</sup> See 42 U.S.C. § 300f(6).

<sup>28</sup> 40 C.F.R. § 141.86(a)(3)-(5); 56 Fed. Reg. 26,460, 26,514 (June 7, 1991) (adopting approach that "require[s] water systems to collect samples from high-risk residences that are most likely to have lead problems").

uniform and adequate levels of public health protection.”<sup>29</sup> Because targeting high-risk residences “means that the detected levels will likely be higher than if sampling were randomly distributed,”<sup>30</sup> Edwards’ data showing a 90th percentile lead level of 25 ppb is particularly alarming given that his sampling protocol would be expected to produce *lower* results than the targeted sampling protocol mandated by the Lead and Copper Rule.

The City’s monitoring data confirm that some Flint residents’ water contains lead at concentrations above the federal action level. Several samples collected by the City showed lead levels as high as 397 ppb, 25 times the action level.<sup>31</sup> Although the City claims that its data show that the 90th percentile lead concentration is lower than the 90th percentile in Edwards’ sampling pool, these differences may be attributable to the sampling methods employed by the City. For instance, the City instructed residents to pre-flush their water for “at least 5 minutes” before collecting the sample.<sup>32</sup> Pre-flushing has the effect of reducing the amount of lead in the sample, which is why one of the key steps residents can take to reduce their lead exposure following discovery of a lead problem is to flush their taps prior to consuming tap water.<sup>33</sup> Pre-flushing in sampling results in “significant underestimation of lead levels in drinking water.”<sup>34</sup> Pre-flushing is not included in the collection procedures EPA recommends,<sup>35</sup> and is contrary to the Lead and Copper Rule’s intent to use worst-case lead and copper sampling data.<sup>36</sup> Evidence also shows that in the January to June 2015 monitoring period, the City did not use a pre-developed sampling pool that targeted high-

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<sup>29</sup> 56 Fed. Reg. at 26,514.

<sup>30</sup> *Id.*

<sup>31</sup> See Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ (Mar. 18, 2015) (referring to sample with lead level at 397 ppb) (attached as Ex. 30); Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (June 4, 2015) (referring to samples showing lead levels 22 ppb and 40 ppb) (attached as Ex. 31); Consumer Notice of Lead & Copper Results in Drinking Water (Feb. 18, 2015) (lead level at 104 ppb) (attached as Ex. 32); see also Mich. Dep’t of Env’tl. Quality, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Aug. 20, 2015) (showing six samples with lead levels over the action level (attached as Ex. 33).

<sup>32</sup> Drinking Water Lead & Copper Sampling Instructions, *available at* [http://www.michigan.gov/documents/deq/Lead\\_Copper\\_Sampling\\_Instructions\\_329915\\_7.pdf](http://www.michigan.gov/documents/deq/Lead_Copper_Sampling_Instructions_329915_7.pdf) (attached as Ex. 34).

<sup>33</sup> Memorandum from Miguel A. Del Toral, Regulations Mgr., Ground Water and Drinking Water Branch, U.S. EPA Region 5, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, U.S. EPA Region 5, re High Levels in Flint, Michigan—Interim Report 2 (June 24, 2015) (attached as Ex. 35).

<sup>34</sup> *Id.*

<sup>35</sup> U.S. EPA, Lead and Copper Rules Monitoring and Reporting Guidance for Public Water Systems 28 (Mar. 2010) (attached as Ex. 36).

<sup>36</sup> See Letter from Cynthia C. Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008) (“[W]e believe that [pre-flushing] goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowners in the sample.”) (attached as Ex. 37).

risk residences and did not sample sites consistently across monitoring periods.<sup>37</sup> This likewise may have caused the City's sampling results to underrepresent the 90th percentile lead level in the water system.<sup>38</sup>

The lead contamination in Flint's water is likely to continue. As EPA has explained, "[t]he amount of lead in drinking water depends heavily on the corrosivity of the water,"<sup>39</sup> and testing has shown that Flint River water is highly corrosive. Moreover, the City has no treatment program in place to control the corrosive effects of the water on the City's thousands of lead service lines.<sup>40</sup>

**B. Lead in drinking water presents an imminent and substantial endangerment to Flint residents**

The endangerment to Flint residents from lead in drinking water is both "imminent" and "substantial."<sup>41</sup> The endangerment to community members' health is imminent because the threat "is present now."<sup>42</sup> Highly corrosive water in the Flint River has been flowing through lead service lines in Flint's water system for more than a year without any corrosion control treatment, and sampling has already shown the existence of dangerously high levels of lead in residents' tap water.

The seriousness of the potential harms from lead exposure renders the endangerment "substantial" for purposes of the SDWA.<sup>43</sup> The poisonous effects of lead on "virtually every system in the body," and particularly on the developing brains of young children, are well documented.<sup>44</sup> "Even low levels of lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement," effects that are irreversible.<sup>45</sup>

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<sup>37</sup> See *infra* p. 11 & nn. 70-74; 40 C.F.R. § 141.86(a), (b)(4).

<sup>38</sup> See *infra* p. 11-12.

<sup>39</sup> 56 Fed. Reg. 26,460, 26,466 (June 7, 1991).

<sup>40</sup> MDEQ, Frequently Asked Questions: Water Lead Levels in the City of Flint (Sept. 2015), [https://www.michigan.gov/documents/deq/deq-spotlight-Flint\\_water\\_FAQs\\_500946\\_7.pdf](https://www.michigan.gov/documents/deq/deq-spotlight-Flint_water_FAQs_500946_7.pdf) (stating that Flint has more than 15,000 lead service lines) (attached as Ex. 38).

<sup>41</sup> *Id.* § 300i.

<sup>42</sup> *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 486 (1996) (interpreting substantial-and-imminent-endangerment provision in RCRA).

<sup>43</sup> *E.g., Me. People's Alliance v. Mallinckrodt, Inc.*, 471 F.3d 277, 288 (1st Cir. 2006).

<sup>44</sup> Centers for Disease Control and Prevention, Preventing Lead Poisoning in Your Children: Chapter 2 (Oct. 1991), <http://www.cdc.gov/nceh/lead/publications/books/plpyc/chapter2.htm> (attached as Ex. 39); see also 80 Fed. Reg. 278, 290 (Jan. 5, 2015) ("Lead has been demonstrated to exert a broad array of deleterious effects on multiple organ systems."); 56 Fed. Reg. 26,460, 26,467-68 (June 7, 1991).

<sup>45</sup> Centers for Disease Control and Prevention, *What Do Parents Need to Know to Protect Their Children?* (last updated June 19, 2014), [http://www.cdc.gov/nceh/lead/ACCLPP/blood\\_lead\\_levels.htm](http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm) (attached as Ex. 40).

The scientific community has not identified any threshold of lead in blood below which there are no adverse health impacts.<sup>46</sup>

Increased lead exposure from drinking water is dangerous because "drinking water can make up 20 percent or more of a person's total exposure to lead."<sup>47</sup> For infants whose diet consists of baby formula made with drinking water, lead in drinking water can make up between forty and sixty percent of total lead exposure.<sup>48</sup> Lead levels in drinking water above the federal action level have been associated with an increase in the rate of individuals with elevated blood lead levels.<sup>49</sup> Exposure to lead-contaminated drinking water has also been associated with fetal death and reduced birth rates.<sup>50</sup> As EPA has recognized, "[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development."<sup>51</sup> In short, there is no safe level of lead in drinking water.<sup>52</sup>

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<sup>46</sup> Centers for Disease Control and Prevention, National Biomonitoring Program, Factsheet: Lead (last updated Jul. 12, 2013), [http://www.cdc.gov/biomonitoring/Lead\\_Fact\\_Sheet.html](http://www.cdc.gov/biomonitoring/Lead_Fact_Sheet.html) ("No safe blood lead level has been identified.") (attached as Ex. 41).

<sup>47</sup> U.S. EPA, Lead and Copper Rule: A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act (Oct. 2005), [http://www.epa.gov/safewater/schools/pdfs/lead/qrg\\_lcr\\_schools.pdf](http://www.epa.gov/safewater/schools/pdfs/lead/qrg_lcr_schools.pdf) (attached as Ex. 42).

<sup>48</sup> Lead in Drinking Water, Wisc. Dep't of Nat. Res. 2008), <http://dnr.wi.gov/topic/drinkingwater/documents/forms/lead.pdf> (attached as Ex. 43). Several cases have also been reported in which infant formula constituted from lead-contaminated tap water was determined to be the sole cause of childhood lead poisoning. See, e.g., Michael Shannon & John W. Graef, *Lead Intoxication: From Lead-contaminated Water Used to Reconstitute Infant Formula*, 28 *Clinical Pediatrics* (8) 380, 381 (1989) (attached as Ex. 44).

<sup>49</sup> Ronnie Levin, et al., *Lead Exposures in U.S. Children, 2008: Implications for Prevention*, 116 *Environ. Health Perspect.* (1) 1285-93 (2008), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569084/> (attached as Ex. 45); CDC, *Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water—District of Columbia, 2004*, 53 *MMWR Weekly* (No. 12) 268-70 (Apr. 2, 2004), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5312a6.htm> (attached as Ex. 46).

<sup>50</sup> Marc Edwards, *Fetal Death and Reduced Birth Rates Associated with Exposure to Lead-Contaminated Drinking Water*, 48 *Envtl. Sci. & Tech.* 739-40 (2013), available at <http://pubs.acs.org/doi/pdf/10.1021/es4034952> (attached as Ex. 47).

<sup>51</sup> U.S. EPA, Basic Information about Lead in Drinking Water, *supra* note 11.

<sup>52</sup> See Email from Jennifer Crooks, U.S. EPA, to Mike Prysby, MDEQ (Feb. 26, 2015) ("[T]here are no safe levels of lead in drinking water.") (attached as Ex. 48); City of Flint Issues Lead Advisory, *supra* note 13 (recognizing that "no level of lead is considered safe"). Because no safe level of lead in blood has been identified, EPA promulgated a Maximum Contaminant Level Goal for lead in drinking water of zero, reflecting EPA's determination that a threshold of zero lead in drinking water is the level at which "no known or anticipated adverse effects" on human health will occur, allowing for a margin of safety. See 40 C.F.R. §§ 141.2, 141.51(b).



Petitioners have reason to be concerned about the health impacts of increased exposure to lead in drinking water. A recent study conducted by researchers at Flint's Hurley Medical Center found that the rate of Flint children with elevated blood lead levels is rising. An analysis of 1746 Flint children under five years old showed that the proportion of children with elevated blood lead levels has *doubled* in the time since the City changed its drinking water source.<sup>53</sup> The study found that the rate of elevated blood lead levels in children under fifteen months is 2.5 times greater after the switch to Flint River water than the rate before the switch.<sup>54</sup> The study found no corresponding statistically significant increase in the rate of elevated blood lead levels of children living in Genesee County outside of Flint.<sup>55</sup> Data released by the State confirm that the percentage of Flint children under sixteen with elevated blood levels has risen (from 2.37% to 3.21%) since the switch to Flint River water.<sup>56</sup>

This increased rate of children with elevated blood lead levels is even more alarming because the Flint community may be more at risk for elevated blood lead levels and lead poisoning than communities elsewhere in the country. Michigan ranks fifth worst in the country for harmful exposures to lead.<sup>57</sup> Low income is a risk factor for lead poisoning, and the proportion of families living below the poverty level in Flint is more than three times the national proportion (35.5% in Flint vs. 11.3% nationally in 2013 estimates).<sup>58</sup> Living in housing built before 1978 (when the federal ban on high-lead paint went into effect) is also a risk factor, because dust from lead paint continues to be a major source of lead exposure in children.<sup>59</sup> Nearly 90% of housing in Flint was built before

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<sup>53</sup> Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community (PowerPoint Presentation), *available at* <http://flintwaterstudy.org/2015/09/pediatric-lead-exposure-presentation-from-hurley-medical-center-doctors-concerning-flint-mi/> (attached as Ex. 49).

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> Kristi Tanner & Nancy Kaffer, *State data confirms higher blood-lead levels in Flint kids*, Detroit Free Press, Sept. 29, 2015, <http://www.freep.com/story/opinion/columnists/nancy-kaffer/2015/09/26/state-data-flint-lead/72820798/> (attached as Ex. 50).

<sup>57</sup> Centers for Disease Control and Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013), [http://www.cdc.gov/nceh/information/healthy\\_homes\\_lead.htm](http://www.cdc.gov/nceh/information/healthy_homes_lead.htm) (attached as Ex. 51).

<sup>58</sup> 2009-2013 American Community Survey 5-year Estimates, 2013, *available at* <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml> (enter "Flint, MI" in the box under "Community Facts," click on "Income" on left-side bar, then click "Selected Economic Characteristics" under "2013 American Community Survey") (table attached as Ex. 52 compares data from Flint, MI to Michigan and the United States).

<sup>59</sup> *See, e.g.,* Am. Cancer Soc'y, *Lead, Lead in the Environment*, <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/lead> (last updated May 27, 2014) (characterizing lead paint as a "major" source of exposure) (attached as Ex. 53).

1978.<sup>60</sup> These factors show that the risks to Flint residents from lead exposure may be particularly acute.

The monitoring data showing high lead levels in Flint drinking water, combined with the well-known serious adverse health impacts of lead exposure, demonstrate “a substantial likelihood that contaminants capable of causing adverse health effects will be ingested by consumers if preventive action is not taken.”<sup>61</sup> These circumstances constitute an imminent and substantial endangerment warranting emergency federal action.<sup>62</sup>

#### **IV. Neither the City nor MDEQ has acted to protect Flint residents from continuing health risks of exposure to high lead levels in drinking water**

Federal emergency action is necessary because neither the City nor MDEQ has adequately addressed the danger to Flint residents from lead in their drinking water. To date, the local and state response to lead concerns has been, at best, nominal and ineffective.<sup>63</sup>

The state-appointed emergency manager and MDEQ allowed the City to begin using the Flint River as its water source without adequately ensuring that the system would continue to “operate and maintain optimal corrosion control treatment,” as required by the SDWA.<sup>64</sup> The Lead and Copper Rule requires states to “review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system.”<sup>65</sup> But as of March 28, 2014, three weeks before the City planned to start using Flint River water, the City had not even submitted an application to the State for approval to make the change.<sup>66</sup> A month later, MDEQ had approved the change without requiring the City to implement corrosion control measures, as required by the Lead and

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<sup>60</sup> 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 2013), [https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels\\_419508\\_7.pdf](https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels_419508_7.pdf) (attached as Ex. 54); see CPSC, *CPSC Announces Final Ban on Lead-Containing Paint* (Sept. 2, 1977), <http://www.cpsc.gov/en/Recalls/1977/CPSC-Announces-Final-Ban-On-Lead-Containing-Paint/> (attached as Ex. 55); Maj. Thomas F. Zimmerman, *The Regulation of Lead-Based Paint in Air Force Housing*, 44 Air Force L. Rev. 169, 175 (1998).

<sup>61</sup> H.R. Rep. No. 93-1185, 1974 U.S.C.A.A.N. 6454, 6488 (July 10, Aug. 15, 1974) (defining when an endangerment may be considered substantial).

<sup>62</sup> See *Trinity Am. Corp. v. U.S. E.P.A.*, 150 F.3d 389, 399 (4th Cir. 1998) (imminent and substantial endangerment found when “dangerous levels of [a] contaminant[] exist in [the] water supply,” and that the contaminant “pose[s] a great risk to human health”).

<sup>63</sup> See *id.* at 397 (explaining that “minor” and “ineffective” action by state and local authorities does not “strip EPA of its statutory emergency powers”).

<sup>64</sup> 40 C.F.R. § 141.81(b).

<sup>65</sup> 40 C.F.R. § 141.81(b)(3)(iii).

<sup>66</sup> Dominic Adams, *State says Flint hasn’t applied for permit to use river as drinking water source*, Michigan Live, Mar. 28, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/03/state\\_says\\_flint\\_hasnt\\_applied\\_1.html](http://www.mlive.com/news/flint/index.ssf/2014/03/state_says_flint_hasnt_applied_1.html) (attached as Ex. 56).

Copper Rule.<sup>67</sup> When EPA inquired about what the City was doing to control corrosion, MDEQ falsely stated that the City was already operating an "Optimized Corrosion Control Program."<sup>68</sup> The opposite was true: as the State later admitted, the City had not implemented any corrosion control treatment measures (and still has not done so).<sup>69</sup>

Further, evidence indicates that the City and MDEQ are either unwilling or unable to conduct tap water monitoring for lead in compliance with federal regulations. As discussed above, statements by a Flint Utilities Administrator suggest that the City did not identify a sampling pool prior to conducting monitoring, as federal law expressly requires. Instead, the Department of Public Works "just thr[ew] out bottles everywhere just to collect as many [samples] as we c[ould]."<sup>70</sup> The City even asked its own employees and their "family/friends who live in the city" to participate in the sampling group.<sup>71</sup>

The City also may not have complied with requirements for targeting high-risk homes, including the requirement that 50% of sampled sites contain lead pipes or copper pipes with lead solder.<sup>72</sup> The City's Utilities Administrator conceded that the City was "not really" able to determine that every residence sampled had lead pipes, even though this was what the City affirmatively reported to MDEQ in a monitoring compliance report.<sup>73</sup> Further, the City's monitoring compliance report shows that the City did not meet the deadline to submit its monitoring results and did not comply with the requirement to sample the same sites across monitoring periods.<sup>74</sup> During the January to June 2015 monitoring period, the City initially sought to obtain 100 samples.<sup>75</sup> After the City failed to collect that number, MDEQ decided that only sixty samples were required.<sup>76</sup>

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<sup>67</sup> See 40 C.F.R. § 141.81(a)-(b).

<sup>68</sup> See Email from Stephen Busch, MDEQ, to Jennifer Crooks and Miguel Del Toral, U.S. EPA (Feb. 27, 2015) ("The City of Flint . . . [h]as an Optimized Corrosion Control Program[.]" ) (attached as Ex. 57).

<sup>69</sup> Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015) ("Flint is not currently practicing corrosion control treatment at the [Water Treatment Plant].") (attached as Ex. 58).

<sup>70</sup> See 40 C.F.R. § 141.86(a)(1); *Thirst for Truth: Who's to Blame for Flint Water Crisis?* (ACLU of Michigan, Jul. 28, 2015), available at <https://www.youtube.com/watch?t=9&v=LT09irD2f0Y> (statement of Michael Glasgow, Utilities Administrator).

<sup>71</sup> Email from Michael Glasgow (June 1, 2015) (attached as Ex. 59).

<sup>72</sup> 40 C.F.R. § 141.86(a)(8).

<sup>73</sup> *Thirst for Truth*, supra note 70 (statement of Michael Glasgow, Utilities Administrator, at 5:30-5:45).

<sup>74</sup> City of Flint Water Plant, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Jul. 28, 2015) (checking "no" box in response to question asking whether City used the same sampling sites as the previous monitoring period) (attached as Ex. 60); see 40 C.F.R. §§ 141.86(b)(4); 141.90(a)(1).

<sup>75</sup> See Email from Adam Rosenthal, MDEQ, to Michael Glasgow, Brent Wright, City of Flint (June 25, 2015) (attached as Ex. 61).

<sup>76</sup> Compare *id.* ("We hope you have 61 more lead/copper samples collected and sent to the lab by 6/30/15, and that they will be below the AL for lead. As of now with 39 results,

Compliance with the SDWA's monitoring requirements is critical to accurately assessing the levels of lead in Flint's water, and to ensuring implementation of the drinking water standards set forth in the Lead and Copper Rule. Although the serious apparent flaws in the City's testing procedures call into question whether the City is complying with the SDWA, both the City and MDEQ continue to maintain that Flint's water "is meeting state and federal drinking water standards."<sup>77</sup>

Neither the City nor MDEQ has taken measures to broadly provide an alternative, free source of safe drinking water to residents. Instead, state and local authorities have dismissed citizen concerns about lead in drinking water as "near-hysteri[cal]" and "irresponsible."<sup>78</sup> City officials have encouraged residents to install in-home water filters, flush their taps before using the water, and send their children to school with bottled water, all at the residents' own expense, which is alarming given that there are roughly 14,000 households in Flint with children under 18, and nearly three-quarters of the children in those households receive Supplemental Security Income (SSI), cash public assistance income, or Food Stamp/SNAP benefits.<sup>79</sup> These remedies are inadequate: filters are expensive, may clog quickly, are of varying effectiveness at removing lead, and require

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Flint's 90th percentile is over the AL for lead."), with City of Flint, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply, *supra* note 31, at 1 ("Revised report after conference call with DEQ staff . . . [D]ue to population the number of samples required was reduced to 60.").

<sup>77</sup> Letter from MDEQ to MI State Senators 2 (Sept. 17, 2015) (attached as Ex. 62); City of Flint, *City of Flint Issues Lead Advisory*, *supra* note 13 ("[T]he City is in full compliance with the Federal Safe Drinking Water Act.").

<sup>78</sup> *Did this Michigan Town Poison its Children?*, U.S. News & World Report, Sept. 24, 2015, <http://www.usnews.com/news/articles/2015/09/25/flint-michigan-children-show-high-levels-of-lead-in-blood> (attached as Ex. 63); Ron Fonger, *Feds sending in experts to help Flint keep lead out of water*, Michigan Live, Sept. 10, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/university\\_researchers\\_dont\\_dr.html](http://www.mlive.com/news/flint/index.ssf/2015/09/university_researchers_dont_dr.html) (attached as Ex. 64). The City's statement that it will "work with [MDEQ] on implementing water optimization measures to reduce the corrosive effects of water on older pipes" by 2016 is a hollow promise given the present and continuing exposure to lead and lead's irreversible effects on human health. Ron Fonger, *Flint will have lead-reduction plan for water system by 2016, officials say*, Michigan Live, Sept. 3, 2015, <http://www.mlive.com/news/flint/index.ssf/2015/09/mayor.html> (attached as Ex. 65).

<sup>79</sup> City of Flint, *City of Flint Issues Lead Advisory*, *supra* note 13; Amanda Emery, *Flint public school students told to bring own water to school*, Michigan Live, Sept. 25, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/flint\\_community\\_schools\\_asks\\_s.html](http://www.mlive.com/news/flint/index.ssf/2015/09/flint_community_schools_asks_s.html) (attached as Ex. 66); see factfinder.census.gov (2010 data) (enter "Flint, MI" in box under "Community Facts," then click "General Population and Housing Characteristics" under "2010 Census") (attached as Ex. 67); 2009-2013 American Community Survey 5-Year Estimates, Children's Characteristics (2013 estimate), factfinder.census.gov (enter "Flint, MI" in box under "Community Facts," then click "Poverty" on left-side bar; then click "Children Characteristics") (attached as Ex. 68).

ongoing maintenance. Pre-flushing is also imperfect, does not always eliminate lead, and may be prohibitively expensive for many families given Flint's high water rates.<sup>80</sup>

The City's and State's apparent lapses in regulatory compliance, and their failure to take responsibility for responding to the City's lead problems, demand federal intervention.

**V. EPA should act immediately to adequately address the public health emergency created by lead in Flint drinking water**

Petitioners urge EPA to take all actions necessary to abate the endangerment presented by lead in Flint's drinking water, and to inform Flint residents about the potential hazards of drinking the City's tap water. At minimum, Petitioners request that EPA:

- Immediately order the City and MDEQ to reconnect Flint's water system with water from the Detroit Water and Sewerage Department. EPA should work with the City of Flint, MDEQ, and the Detroit Water and Sewerage Department to facilitate this renewed connection as soon as possible.
- Immediately provide Flint residents with an alternative, free source of safe drinking water that meets EPA standards. This may include providing customers with free bottled water or providing (and routinely maintaining) free in-home and replacement filters that are certified to remove lead by NSF International.<sup>81</sup>
- Immediately order the City to advise all Flint water customers to avoid consuming unfiltered water from the City's water system. The notice should warn customers not to use unfiltered Flint water to make baby formula or for children. The notice should inform customers that if they have no alternative water source, they should flush Flint water for *a minimum* of five minutes before

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<sup>80</sup> Dominic Adams, *Flint monthly water and sewer bills highest in Genesee County by \$35*, Michigan Live, June 1, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/06/post\\_386.html](http://www.mlive.com/news/flint/index.ssf/2014/06/post_386.html) (citing Flint bills at \$140/month) (attached as Ex. 69). A state-court judge recently ruled that the Emergency Manager's decision to significantly raise water rates was unlawful. Ron Fonger, *Judge orders Flint to cut water rates 30% in sweeping injunction*, Michigan Live, Aug. 7, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/flint\\_ordered\\_to\\_cut\\_water\\_rat.html](http://www.mlive.com/news/flint/index.ssf/2015/08/flint_ordered_to_cut_water_rat.html) (attached as Ex. 70).

<sup>81</sup> See U.S. EPA, Planning for an Emergency Drinking Water Supply (June 2011) (provision of bottled water is a "common federal response" in emergencies) (attached as Ex. 71); cf. 40 C.F.R. § 141.101 (allowing public water systems to use bottled water on a temporary basis "to avoid unreasonable risk to health"); U.S. EPA, Memorandum re: Update on Providing Alternative Water Supply as Part of Superfund Response Actions (Sept. 24, 2010), <http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/610732.pdf> (allowing delivery of bottled water on a temporary basis in certain circumstances in CERCLA removal or remediation actions) (attached as Ex. 72).

use. EPA should prohibit the City from charging water customers for this flushing time.

- Use its authority under 40 C.F.R. §§ 142.19 and 141.82(i) to review MDEQ's determinations concerning corrosion control requirements for the Flint water system, and issue a federal order establishing the optimal corrosion control treatment requirements for the Flint water system and requiring Flint to immediately comply with these requirements.
- Order the City to conduct continued monitoring for lead and copper in six-month periods in accordance with the procedures set forth in 40 C.F.R. § 141.86. EPA should directly oversee the City's monitoring by ordering the City to submit a Quality Assurance Project Plan (QAPP) to ensure that all information, sample collection, analytical data and resulting decisions are technically sound, scientifically valid, and properly administered. EPA must approve the City's QAPP before the City conducts any additional monitoring. EPA should prohibit the City from conducting reduced monitoring under 40 C.F.R. § 141.86(d)(4) for at least five years.
- Order the City to comply with the public education and supplemental monitoring requirements in 40 C.F.R. § 141.85, including but not limited to immediately notifying consumers of the results of tests completed at their homes or places of business, and providing the public education, monitoring, and notification established in those rules.
- Order any other additional relief that EPA determines is "necessary to protect the health" of Flint residents from lead contamination in drinking water.

## VI. Conclusion

For the foregoing reasons, Petitioners respectfully request that EPA take the actions necessary to abate the imminent and substantial endangerment to Flint residents' health from lead contamination in their drinking water.

Dated: October 1, 2015

Respectfully Submitted,

/s/ Pastor Allen Overton  
Pastor Allen Overton  
**COALITION FOR CLEAN WATER**

/s/ Pastor Alfred Harris  
Pastor Alfred Harris  
**CONCERNED PASTORS FOR SOCIAL ACTION**  
2200 Forrest Hill  
Flint, Michigan 48504  
(810) 394-6787

/s/ Melissa Mays  
Melissa Mays  
LeeAnne Walters  
**WATER YOU FIGHTING FOR**

/s/ Claire McClinton  
Claire McClinton  
**DEMOCRACY DEFENSE LEAGUE WATER TASK FORCE**

/s/ Marc Edwards  
Marc Edwards, CEE  
Siddhartha Roy  
**FLINT WATER STUDY TEAM**

/s/ Dawn Kettinger  
Dawn Kettinger  
**MICHIGAN NURSES ASSOCIATION**

/s/ Yvonne M. White  
Yvonne M. White  
**NAACP - Michigan State Conference**

/s/ Jeffrey L. Edison  
Jeffrey L. Edison  
**MICHIGAN CHAPTER OF THE NATIONAL  
CONFERENCE OF BLACK LAWYERS**

/s/ Brooke Tucker

Brooke Tucker

Michael Steinberg

**AMERICAN CIVIL LIBERTIES UNION OF MICHIGAN**

2966 Woodward Ave.

Detroit, MI 48201

(313) 578-6800

/s/ Dimple Chaudhary

Dimple Chaudhary

Anjali Waikar

Sarah C. Tallman

Evan Feinauer

**NATURAL RESOURCES DEFENSE COUNCIL**

20 N. Wacker Drive, Suite 1600

Chicago, IL 60606

(312) 663-9900



## Olszewski, Rosemarie (DEQ)

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, February 17, 2015 4:03 PM  
**To:** Howard Croft  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: City Water Tech Team

Howard,

After further discussion with ODWMA staff, I am available to participate in the TAC. My main role will be review water system reports and provide comments and/or guidance primarily from a regulatory standpoint. Please keep me informed as to when the first meeting will be held. Finally, I wish to extend my thanks for the invitation to participate in the TAC.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]  
**Sent:** Saturday, February 14, 2015 8:45 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** City Water Tech Team

Mike,

The City of Flint has contracted with **Veolia** North America in order to have an additional review of the water system. As part of this review, we are working to develop a Technical Advisory Committee (**TAC**) that will that will receive reports and interact with the technical staff from **Veolia**. The City has identified 8 - 12 entities or individuals that we are extending an invitation to participate on this committee.

I would like to extend this invitation to you or your **designee** to be a representative on the **TAC** team which we hope to have established by early next week.

I understand that this is short notice but if you would consider the offer and confirm or deny your participation I would greatly appreciate it. We are hoping to announce the names of this team at a Public Works Committee meeting Wednesday February 18th. The details of the first meeting and the ongoing agenda which is anticipated to extend through the implementation of the **Karegnondi** Water Authority as a water source will also be unveiled next week..

Thank you,

--

**Howard Croft**

Public Works Director

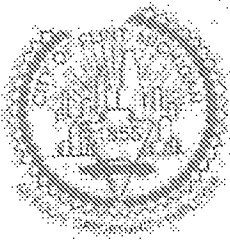
City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)



Dayne Walling  
Mayor

January 18, 2015

The Honorable Rick Snyder  
Governor, State of Michigan  
P.O. Box 30013  
Lansing, MI 48909

RE: Flint Water Improvement Plan

Dear Governor Snyder:

On behalf of the Flint community, I am writing to convey serious concerns about water quality and to request your support for my proposed Flint Water Improvement Plan. Access to safe and clean water is a basic human right, and, therefore, policy and budget decisions need to ensure that water is affordable and secure for everyone in Flint and all across Michigan. It is essential there is City, State and Federal cooperation to address the challenges here and to meet the needs of vulnerable populations.

The Flint Water Improvement Plan is focused in five areas: safety, quality, access, investment and education. The plan puts safety and quality first because this is fundamental. It is designed to be a sustainable solution for the City of Flint and the community as we move towards a new permanent water supply from Lake Huron through the Karegnondi Water Authority. My plan offers new ideas and also builds on successful models of utility, energy and assistance programs at the State and Federal levels.

#### Safety & Quality

- 100% Safety is the standard
- City of Flint reports testing data to the public to assure safety and expands testing sites and frequency
- Bring on experienced river water treatment operational management in the City of Flint

#### Access

- Announce an amnesty program for Flint water service turn-ons and reduce the turn-on fee
- Develop a revised affordable payment plan policy to encourage customers to return
- Design Federal and State partnership to establish new Drinking Water Emergency Assistance Fund for the elderly and vulnerable families

#### Investment

- Accelerate water system improvements outlined in the City of Flint Capital Improvement Plan through Federal and State Investments
  - State approves City of Flint's Distressed Cities Fund applications

CITY OF FLINT

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- Federal and State support for replacement or forgiveness of payment to the Drinking Water Revolving Loan Fund due to Flint's status as a distressed community
- Federal and State grants for infrastructure improvements in alignment with the Flint Master Plan
- City Water Department implements budgeted FY15 projects including leak detection, valve repairs, new pipes and meter replacements

#### Education

- Develop a community partnership with universities to provide household and business customers with information on testing and conservation
- Ongoing partnership with Michigan Department of Human Services, United Way, Salvation Army and community organizations to provide information and water assistance with the Keep the Water Flowing Fund and support services
- Expand youth energy initiative to assist households with conservation and efficiency (piloted in summer 2014 with Northwestern High School students, EcoWorks and Consumers Energy)

It is also critical to restore the public confidence in Flint Water. The implementation of this plan must be accompanied by extensive community engagement including local elected officials. My objective is to work with you and your appointed officials, State Senator Ananich, State Representatives Phelps and Neeley, Congressman Kildee, community groups, businesses, churches, foundations, the Flint City Council, and all of the City of Flint and government personnel.

It is imperative that we communicate better and provide residents more information. I understand representatives from the Michigan Department of Environmental Quality will be joining a public forum this week at City Hall. This engagement going forward is vital so thank you for supporting their efforts. I think this issue of transparency is important for communities all across the State. I recommend a review of the applicable laws and policies and, at a minimum, a new requirement that water testing data be reported publicly no less than quarterly by law in all Michigan communities in Flint's population category.

Thank you for the consideration Governor. There is nothing more important in Flint right now than fixing the water problems. We must work together to identify funds to repair and update the water treatment facilities and city-wide infrastructure and to help those persons without access to clean water so that the entire Flint community has sustainable, safe, secure and affordable water now and into the future. This is an important issue for the state of our State of Michigan and I urge you to work with us to implement solutions.

Sincerely,



Dayne Walling, Mayor  
City of Flint

CC: Flint City Council President Joshua Freeman; Congressman Dan Kildee; State Senator Jim Ananich; State Representative Sheldon Neeley; State Representative Phil Phelps; Flint Emergency Manager Jerry Ambrose

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## Flint never had a plan to control corrosion in old water pipes

By [REBECCA WILLIAMS \(/PEOPLE/REBECCA-WILLIAMS-0\)](#) & [LINDSEY SMITH \(/PEOPLE/LINDSEY-SMITH\)](#) · 50 MINUTES AGO

[Twitter \(http://twitter.com/intent/tweet?url=http%3A%2F%2Fwww.michrad.io%2F1NjpdAi&text=Flint%20never%20had%20a%20plan%20to%20control%20corrosion%20in%20old%20water%20pipes\)](http://twitter.com/intent/tweet?url=http%3A%2F%2Fwww.michrad.io%2F1NjpdAi&text=Flint%20never%20had%20a%20plan%20to%20control%20corrosion%20in%20old%20water%20pipes)

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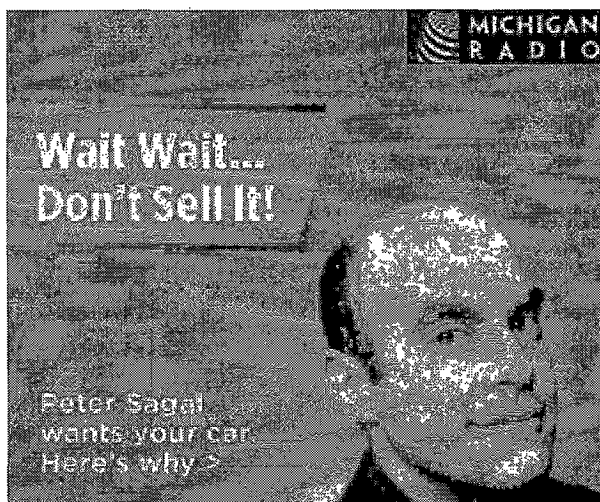


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4:00

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Confused about corrosion control? We were too.

In Flint, lead levels in some children's blood have spiked dramatically. Scientists believe the Flint River is part of the problem. Flint switched from Detroit's water system and started pulling water from the Flint River last year.

We've been hearing some conflicting things from state officials about what exactly Flint has been doing — if anything — to cut down on lead in the water.

### The confusion



([http://mediad.publicbroadcasting.net/p/michigan/files/styles/x\\_large/public/201510/13948769](http://mediad.publicbroadcasting.net/p/michigan/files/styles/x_large/public/201510/13948769)

*Beach-Garland Street - Flint River Bridge.*

CREDIT SARAH RAZAK / FLICKR - [HTTP://MICHRAD.IO/1LXRDJM](http://MICHRAD.IO/1LXRDJM)

State regulators told federal regulators earlier this year by email (<http://michiganradio.org/post/whos-blame-flints-water-crisis-virginia-tech-researcher-points-finger-mdeq#stream/0>) that Flint is not using corrosion control.

Corrosion control is important because it helps prevent lead from leaching out of old pipes into people's tap water.

But on Friday, Michigan Department of Environmental Quality Director Dan Wyant said something contradictory to a room full of reporters.

"Know that when the city switched from Detroit sewer and water, that the city utilized corrosion controls," he said.

Clearly, that directly conflicts with what the state said before.

After Friday's press conference, we asked DEQ spokesman Brad Wurfel to clarify. He then said the corrosion control Flint used was lime.

"Flint was trying to address the hardness of the water, so they chose lime to address the hardness," he said. "That is also a corrosion control agent. It's a recognized corrosion control agent. It just wasn't... it wasn't cutting it."

**We ran this by some outside experts.**

Daniel Giammar is an expert on lead in water. He's a professor of environmental engineering at Washington University in St. Louis, Missouri.

"Simply claiming to have lime addition as corrosion control is insufficient," he says.

Giammar told us that you can use lime for corrosion control, but you have to have a plan. You want to make sure your water hits a certain pH range and alkalinity so that you minimize the amount of lead in the water.

"And so, whether or not you have corrosion control isn't whether or not you're adding lime,

but it's rather, are you achieving the target pH that you set out?" he says.

**In fact, the softening process could be making the situation worse.**

Marc Edwards is a civil engineering professor from Virginia Tech University and a nationally renowned expert on water treatment. He was also confused by Wyant's claim that Flint had corrosion controls in place. So, over this past weekend, he took a closer look at Flint's data (<http://flintwaterstudy.org/2015/10/investigation-of-mdeqs-new-corrosion-control-claim-reveals-more-deception-and-incompetence-where-is-the-epa/>).

He says the water softening treatment Flint is using is actually making Flint's water more corrosive.

"Even as they're denying the water is corrosive and it's causing this higher lead, the pH value is plummeting, it's becoming more acidic," Edwards says. "And it led me to wonder, I mean, are they even watching what's happening to the pH of their water? It's like flying a jumbo jet without checking your gas tank."

### **The DEQ's response**

The DEQ says they have been keeping an eye on the pH of Flint's water.

Liane Shekter Smith heads up DEQ's Office of Drinking Water and Municipal Assistance.

"Absolutely, we've been monitoring the pH data. We monitored it prior to the switch to the Flint River and we monitored it since. And we've compared the pH data and there has not been a significant change."

Shekter Smith says they consider a pH of 7.5 to be acceptable. But both Marc Edwards and Daniel Giammar told us cities should shoot for a pH of 8 or above to minimize the amount of lead getting into drinking water. That's because you want the water to be less acidic to minimize corrosion.

Data (<https://www.cityofflint.com/wp-content/uploads/August-2015-MOR.pdf>) available online from the City of Flint show that the pH of treated water leaving the plant has been trending downward - becoming more acidic. Monthly average pH measurements dropped from 8.07 in December 2014 to 7.34 in August 2015.

**A key point here: there's a difference between having some kind of treatment process that might work and having an approved corrosion control plan.**



Yesterday, Shekter Smith confirmed that Flint does not have a corrosion control plan.

"At the time they proposed switching to the Flint River and implementing the lime softening treatment method, there was an indication that the pH control provided by that method perhaps would provide optimal corrosion control," Shekter Smith says.

It's clear that method didn't work.

Tomorrow, city, state, and federal officials will get together to come up with some kind of plan to control the corrosion.

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21 hours ago

## Olszewski, Rosemarie (DEQ)

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 10:38 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Flint event on Tuesday  
**Attachments:** 2 FDCVT Grant Awards draft.docx; ATT00001.htm; Briefing Flint grant announcement.docx; ATT00002.htm; RELEASE Flint water grants.docx; ATT00003.htm

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Monday, February 02, 2015 4:35 PM  
**To:** Wyant, Dan (DEQ); Datema, Maggie (DEQ); Tommasulo, Karen (DEQ); Thelen, Mary Beth (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Subject:** Fwd: Flint event on Tuesday

All,  
Here is some early information about the event tomorrow in Flint. State leaders, including director Wyant, will announce \$2 million in distress community grants. Based on what little I know so far, it sounds a little bit like SAW grants.  
Will share more details when I get them.  
b  
Sent from my iPhone

Begin forwarded message:

**From:** "Murray, David (GOV)" <MurrayD1@michigan.gov>  
**Date:** February 2, 2015 at 1:34:21 PM EST  
**To:** "Agen, Jarrod (GOV)" <AgenJ@michigan.gov>, "Stanton, Terry A. (Treasury)" <StantonT@michigan.gov>, "Wurfel, Sara (GOV)" <Wurfels@michigan.gov>, "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, "Biehl, Laura (GOV)" <BiehlL@michigan.gov>, "Hollins, Harvey (GOV)" <hollinsh@michigan.gov>, "Clayton, Stacie (GOV)" <claytons3@michigan.gov>, "Walsh, John (GOV)" <WalshJ@michigan.gov>, "Brownfield, Michael (GOV)" <BrownfieldM2@michigan.gov>, "Allard, Claire (GOV)" <allardc1@michigan.gov>, "Rexford, Tori (GOV)" <rexfordt@michigan.gov>  
**Subject:** Flint event on Tuesday

Good afternoon team,

Just wanted to touch base on Tuesday's event in Flint. Unless told otherwise, I'm continuing to prepare for the event.

I touched base with Harvey and Stacie, who recommended we proceed. Harvey is approaching some stakeholders about appearing at the event, and will forward those names to me later today.

I left a message with Dick Posthumus to see if he has any concerns about proceeding.

The Senate Democrats said Sen. Ananich will want to appear. Katie Carey from the House said she would forward information to Rep. Neeley and Phelps. I have not heard back from her yet.

I've attached the backgrounder and the draft releases from Governor's Communications and Treasury. I've sent a message to the mayor's office about a quote, but have not heard back yet.

Brad and I spoke about Director Wyant's role and potential comments. He will point out that there are things the state can do to help monitor the situation, but also will note that the city's water infrastructure is aging, which contributes to the problems.

We need some direction on an advisory. Should this be listed on a typical advisory from the governor's office, or come from Treasury? Do we even issue an advisory in favor of just contacting media directly in the morning?

Please give the draft releases a read for potential changes, or let me know of other concerns.

Thank you!

Dave

**Dave Murray**

Deputy Press Secretary | Executive Office of Governor Rick Snyder

[MurrayD1@michigan.gov](mailto:MurrayD1@michigan.gov)

517-335-6397, office

PPI, mobile

Twitter: @michigandmurray

**Olszewski, Rosemarie (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, February 12, 2015 11:43 AM  
**To:** 'bwright@cityofflint.com'; 'rbincsik@cityofflint.com'  
**Subject:** Residential customers

Brent, Rob....

I need Flint's most recent number of active residential service connections as part of updating MDEQ's estimated population served. Also, add in commercial and industrial accounts; however, keep them separate. Thanks.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517.290-8817

**Olszewski, Rosemarie (DEQ)**

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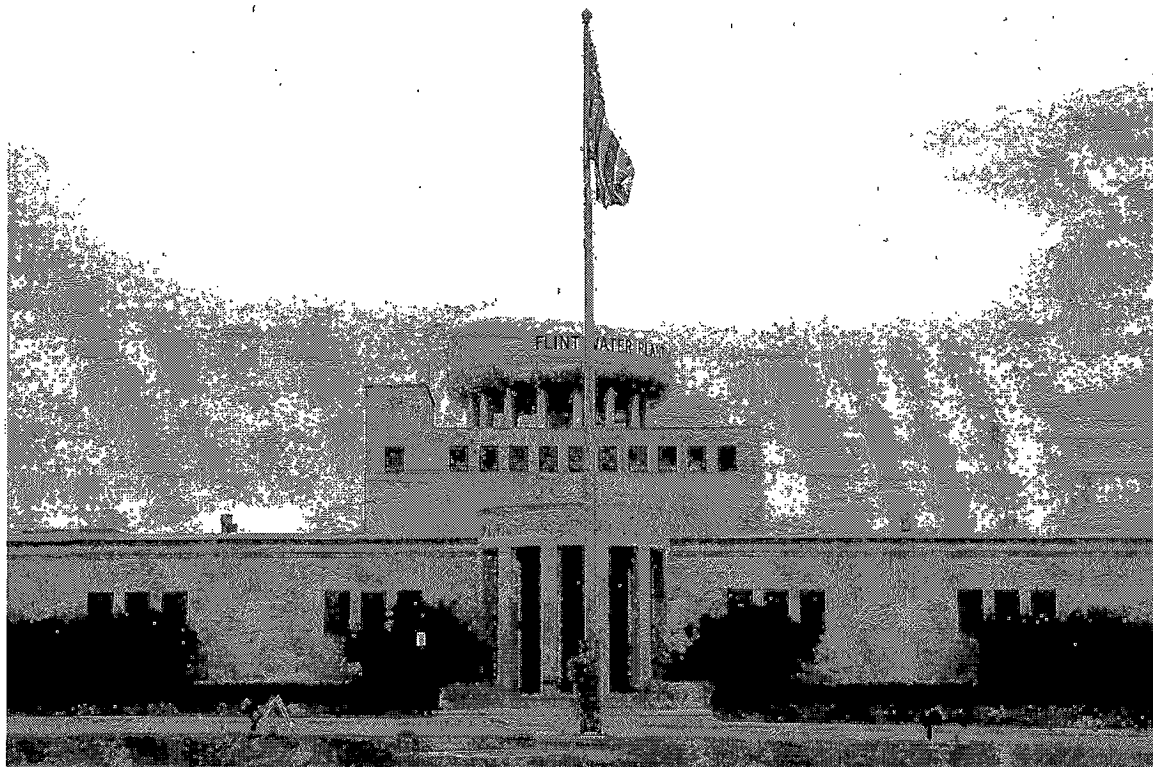
**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, February 06, 2015 1:48 PM  
**To:** emurphy@cityofflint.com  
**Cc:** 'bwright@cityofflint.com'  
**Subject:** Flint River Source Water Assessment  
**Attachments:** Flint River Source Water Assess..doc

Elizabeth,

Attached is a copy of the Flint River Source Water Assessment report for your information. Water treatment plant staff should have a copy of this report, if not, please provide them with a copy.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**Source Water Assessment Report for the  
City of Flint Water Supply  
Flint River Emergency Intake  
February 2004**



*City of Flint Water Treatment Plant,  
Flint, Michigan*

**Prepared for:**

**City of Flint Water Supply; WSSN 2310**

**Prepared by:**

**U.S. Geological Survey, Water Resources Division, Michigan District  
Michigan Department of Environmental Quality, Water Division  
City of Flint Water Utilities Department**

**Michigan Source Water Assessment Report 54**

## Executive Summary

*The purpose of the Source Water Assessment is to analyze the sensitivity and determine susceptibility of a community's source of drinking water to potential sources of contamination.*

*Sensitivity is determined from the natural setting of the source water (raw water to the water treatment plant), and indicates natural protection afforded the source water. Using procedures established in the Great Lakes Protocol, Michigan Source Water Assessment Program, the **emergency** intake for the Flint Water Treatment Plant has a very high degree of sensitivity to potential contaminants. When the effects of agricultural and urban runoff in the Flint River watershed are considered, the Flint intake is categorized as very highly sensitive.*

*Susceptibility identifies factors within the community's source water area that may pose a risk to the water supply. The susceptibility determination provides information with respect to listed facilities and land areas within the source water area that should be given greater priority and oversight in implementing a source water protection program. The source water area for the Flint **emergency** intake includes 96 potential contaminant sources, 16 listed potential contaminant sources within the susceptible area, plus urban and agricultural runoff from the Flint River watershed into the Flint River. The potential contaminant sources, in combination with the very highly sensitive intake, indicate that the Flint **emergency** intake source water is very highly susceptible to potential contamination.*

*The Flint **emergency** intake source water is categorized as very highly susceptible, given land uses and potential contaminant sources within the source water area. However, it is noted that when operating, the City of Flint Water Treatment Plant has effectively treated this source water to meet drinking water standards. The City of Flint has instituted pollution prevention programs, but should be cognizant of additional potential threats to its source of drinking water that are identified in this report. This report explains the background and basis for these determinations.*

## Using this Assessment

Clean, safe drinking water is fundamental to the viability of any community. Protecting the drinking water source is a wise and relatively inexpensive investment in your community's future. The overall intent of this assessment is to provide background information for your community to use in developing a local source water protection program. The assessment benefits your community by providing the following:

- *A basis for focusing limited resources within the community to protect the drinking water source(s).*

The assessment provides your community with information regarding activities within the **source water area (SWA)** that directly affect your water supply. It is within this SWA that a spill or improper use of **potential contaminants** may cause these contaminants to migrate toward the water **intake**. By examining where the source waters are most susceptible to contaminants, and where potential contaminants are located, the assessment clearly illustrates the potential risks that should be addressed.

- *A basis for informed decision-making regarding land use within the community.*

The assessment provides your community with a significant amount of information regarding where your drinking water comes from (the source) and what the risks are to the quality of that source. Knowing where the resource is allows your community planning authorities to

make informed decisions regarding proposed land uses within the SWA that are compatible with both your drinking water resource and the vision of growth embraced by your community.

- ***A basis for dealing with future regulations.***

The assessment has been designed to functionally meet proposed requirements for surface-water supplies. Information needed to address regulatory needs and requirements has been collected and made available to your community through this report.

This source water assessment also provides the basis for a locally developed, voluntary source water protection program. Communities interested in voluntarily developing source water protection programs should contact the Michigan Department of Environmental Quality (MDEQ) or visit the Department web page at <http://www.deq.state.mi.us>.

## **Introduction**

In 1996, Congress amended the **Safe Drinking Water Act** and provided resources for state agencies to conduct source water assessments by identifying SWAs, analyzing the **sensitivity** of the source to natural conditions, conducting contaminant source inventories, and determining the **susceptibility** of the source to potential contamination. Delineations, sensitivity analyses, contaminant inventories, and susceptibility determinations comprise a "source water assessment." Assessments will be completed for every public water supply source in Michigan. To support this effort, the MDEQ Water Division established a partnership with the U.S. Geological Survey (USGS) to develop a method for conducting source water assessments for surface water supplies (Sweat and others, 2000; Sweat and others, 2001).

The requirements for public water supplies in Michigan to meet United States Environmental Protection Agency (USEPA) **maximum contaminant levels (MCLs)** provide some degree of assurance of safe drinking water; however, all systems are vulnerable to potential contamination. One of the best ways to ensure safe drinking water is to develop a local program designed to protect the source of drinking water against potential contamination. Not only does this add a margin of safety, but it also raises the awareness of consumers and/or the community of the risks of drinking water contamination. It is expected that source water assessment results will provide a basis for developing a source water protection program.

## **Background**

Flint is located in Genesee County, about 55 miles northwest of Detroit, Michigan (fig. 1). The city of Flint water supply serves a population of 125,000. In 1967, the city connected to the Detroit Water and Sewage Department (DWSD) water supply and the Flint Water Treatment Plant (WTP) was placed on stand-by operation. The city is required by the MDEQ to maintain this treatment facility for reliability since the city obtains treated water through a single pipeline from the DWSD Lake Huron WTP which is subject to interruption of service. The present intake at the Flint WTP was constructed in 1948 and consists of a concrete box structure on the edge of the Flint River. The intake structure has a bottom elevation of 700.00 and connects through a 72-inch concrete pipe to the low service pump station. Low service pumps lift the river water through the WTP processes of conventional treatment and lime-soda softening.



***Flint WTP Emergency, Flint River Intake Structure  
(Viewed from downstream)***



Treatment at the plant includes the addition ferric chloride as a coagulant, lime and soda ash for softening, chlorine for disinfection, and fluoride addition for dental health.

Water treatment plants are periodically inspected to identify construction, maintenance, operational or source defects that could make them vulnerable to contamination, particularly from contaminants that are microbial in nature, such as fecal coliforms. Water suppliers are provided a sanitary survey report that notes deficiencies in the system, and the State may direct the system to make necessary corrections. The sanitary survey is an important part of a safe drinking water program.

## Climate

The Flint water supply is located in the central Lower Peninsula hydrologic province (Rheaume, 1991), in the Flint River watershed (USGS, 1974, 1982). The region experiences temperate summers with moderate winters. The Flint Bishop International Airport Weather Bureau station reports that the average annual precipitation for the climatic years 1887-2001 was 30.28 inches and the average from the past 5 years is 31.42 inches (NOAA, 2001), with about 13 percent of that as snowfall between November and March. Annual average runoff for the Flint SWA, extrapolated from Miller and Twenter (1986, fig. 1) is 9 to 10 inches.

## Source Water Area Geology and Hydrology

The study area for evaluating the extent of the Flint emergency intake SWA includes the upper reaches of the Flint River watershed (fig. 1). Flint is located roughly in the middle of the Flint River watershed. The



*Flint River – Source Water for City of Flint WTP*

SWA consists of lacustrine clays and silts; end moraines of coarse- and medium-textured till; fine-, medium-, and coarse-textured glacial tills; and postglacial alluvium. The SWA is underlain by Bayport Limestone, Marshall Sandstone and mixed shales, sandstones, and limestones of the Saginaw and Michigan Formations (Martin, 1955; Milstein, 1987). Soils underlying the Flint SWA are primarily associations of the Blount, Boyer,

Brookston, Capac, Ceresco, Celina,

Chelsea, Cohoctah, Conover, Del Ray, Kibbie, Lapeer, Lenawee, McBride, Metea, Miami, Montcalm, Sloan, Spinks series (U.S. Department of Agriculture, 1961; BASINS, 1998; MIRIS, 2000). They include loams, loamy sands, fine sandy loams, silty clay and muck.

Soil permeability is based on the calculated time of travel, in inches per hour (in/hr), for water to move vertically through a saturated soil zone. Soil thickness and permeability values are available in soil survey reports published by the National Cooperative Soil Survey and U.S. Department of Agriculture (1982, 1992, 1993, also 2 county reprints in press). Permeability ranges from less than 0.06 in/hr, rated as very slow, to more than 20 in/hr, rated as very rapid.

# Source-water Area (SWA) for the City of Flint Emergency Water Supply

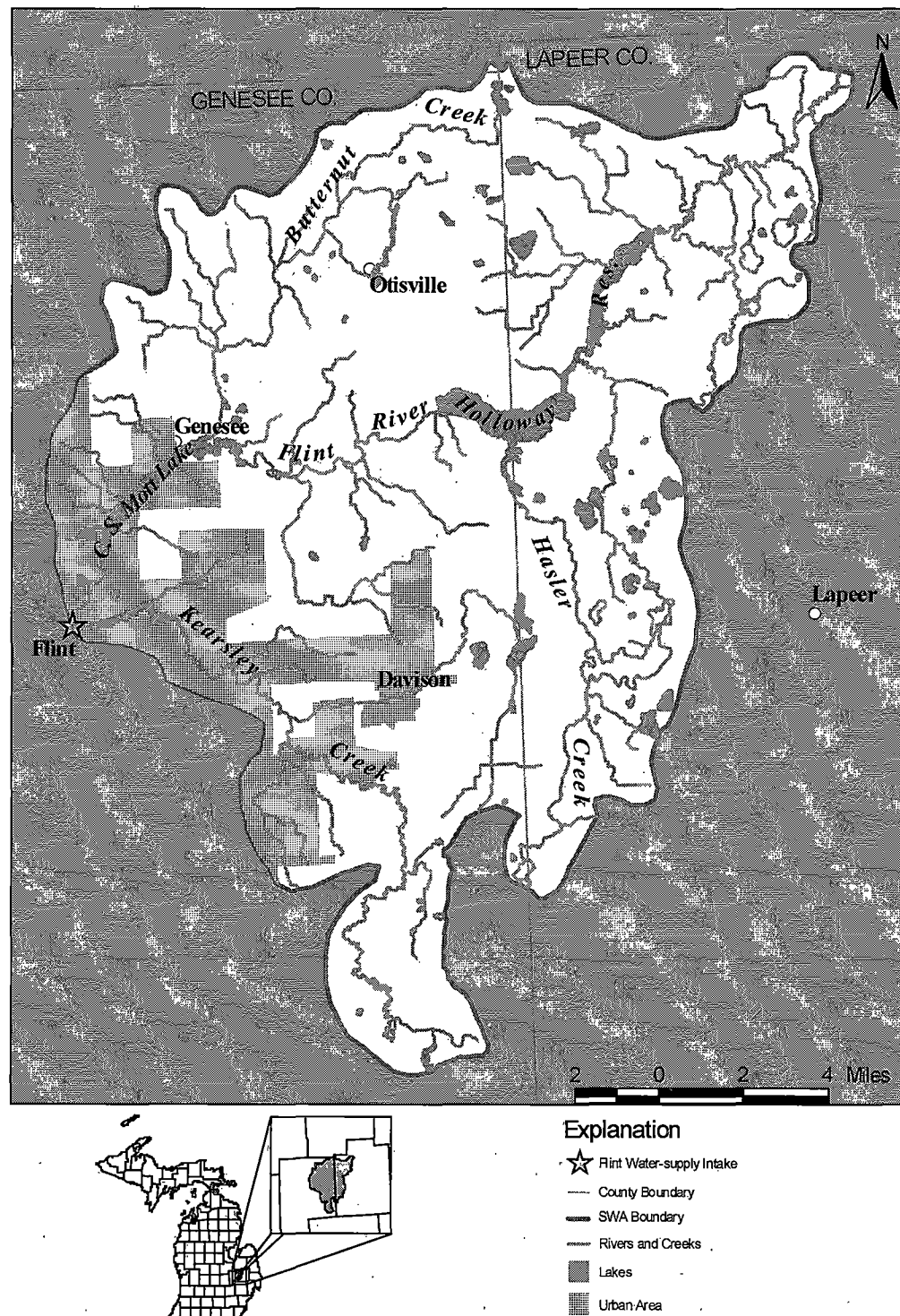


Figure 1. Source-water area (SWA) for the evaluation of the Flint emergency intake, Flint, MI.



***Mott Lake and Dam on Flint River upstream of Flint WTP***

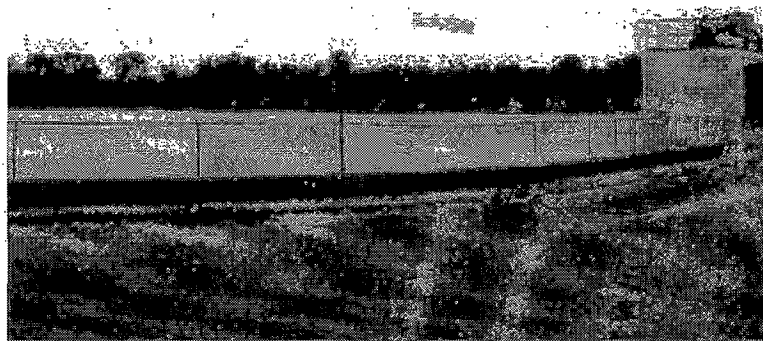
3.1 in/hr (Schneider and Erickson, undated, series of 5 maps; BASINS, 1998; MIRIS, 2000). Soil permeability ranges from moderately slow in the northeastern portion of the SWA to moderate over the eastern portion of the SWA to moderately rapid throughout the central and western portions of the SWA, and rapid around the Flint River (fig. 2; U.S. Department of Agriculture, 1961; BASINS, 1998; MIRIS, 2000). Areas adjacent to the Flint River are underlain by highly sensitive drift lithologies, whereas the remainder of the SWA is underlain by least sensitive drift lithology (Lusch and others, 1992).

The Flint SWA contains an area of about 237 square miles (mi<sup>2</sup>). There are is one operable gage within the Flint SWA and a Flint River gage which operates approximately 9 miles downstream from the Flint Emergency Intake. Between 1932 and 2002 discharge has been recorded at this station by the USGS (Blumer and others, 2002). Annual mean discharge at the Flint River at Flint gauging station was 339 cubic feet per second (cfs) between 1932 and 2001, and ranged from 153 to 1258

cfs. Velocity measured at this stream gage was used to estimate the distance in which contaminants could travel within 24 hours, or the 24-hour time-of-travel (TOT) for this area on the Flint River. The distance calculated for the 24-hour TOT was approximately 27 miles.

Very slowly permeable soils significantly reduce the movement of water through the soil zone and, as a result, allow greater time for natural degradation of contaminants. However, such soils also provide for rapid overland transport of contaminants directly to receiving waters, which in turn may affect the water supply intake. Erosion and transport of soils by surface waters can cause an increase in turbidity. In contrast, very rapidly permeable soils allow for rapid infiltration and passage through the soil zone from the surface. Such soils potentially allow rapid transport of contaminants with minimal contact-time available for contaminant breakdown.

Mean, area-weighted, depth-integrated permeabilities for the Flint SWA range from 0.6 to as much as 7.8 in/hr. The mean permeability is



***Kearsley Lake and Dam on Kearsley Creek Upstream of Discharge to Flint River and Flint WTP Emergency Intake***

## Soil Permeability for the Flint Source-water Area, Flint, MI

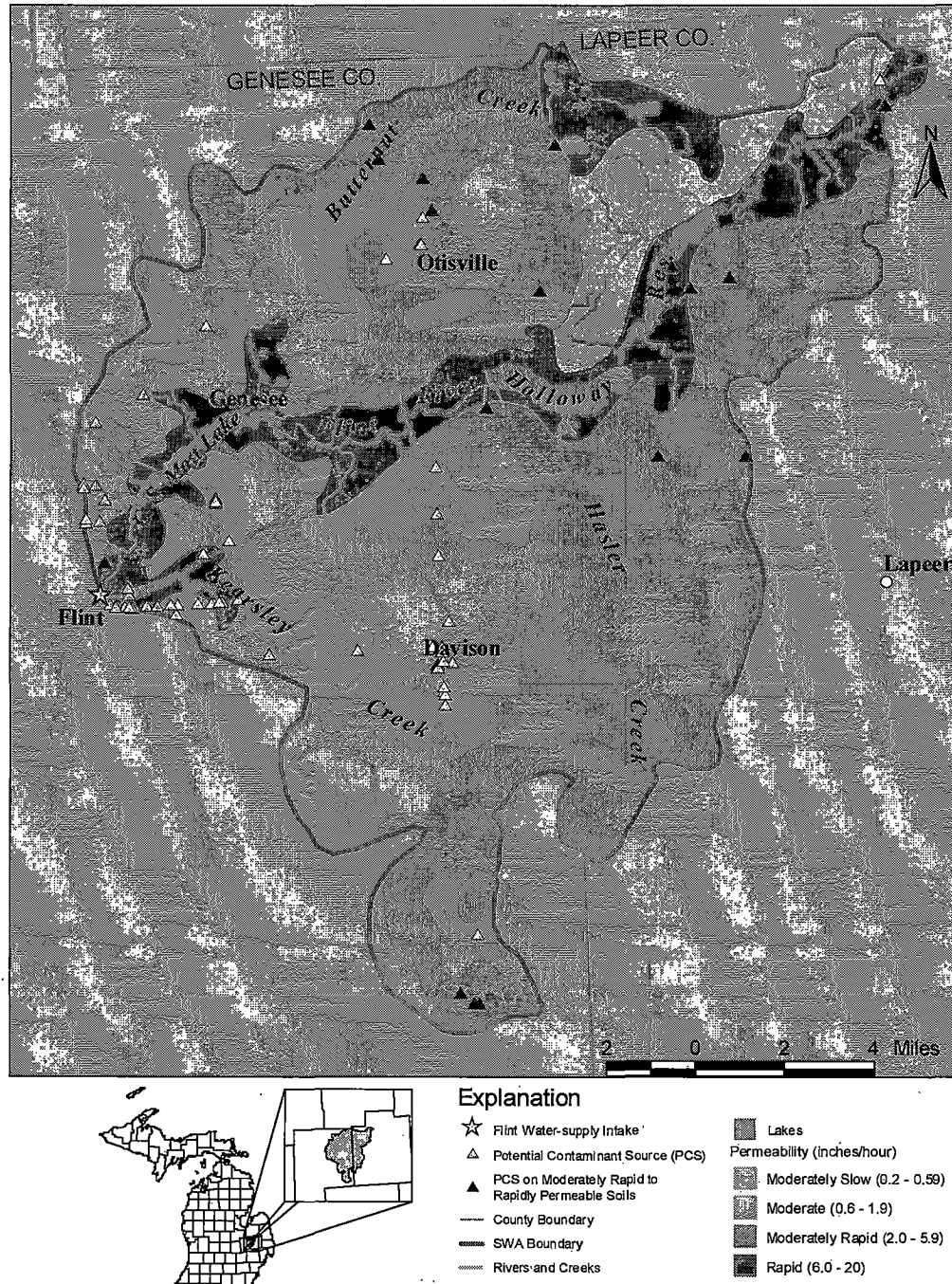


Figure 2. Soil permeability for the Flint emergency water-supply intake SWA. Flint, MI.

## History of Raw Water Quality at the Source

Public water supplies are required to routinely monitor raw water quality for selected parameters to optimize treatment, and to monitor treated water quality for a list of contaminants that is determined by MDEQ and the Safe Drinking Water Act. A detection of any contaminant may indicate that a pathway exists for contaminants to reach the intake. It is important to realize that the results from a given sample only provide information regarding the water quality at the time the sample was collected. Water quality can change with time for a number of reasons. The fact that a water sample does not contain contaminants is no guarantee that contamination will not occur in the future. Conversely, the detection of a contaminant in the past does not indicate that it will occur in the future.

The Flint WTP records for the last 3 years of routine operation, 1965-1967 show that water use fluctuated between 34.4 and 46.5 million gallons per day (MGD), with an average daily use of 38.5 MGD. Raw water quality reported for these three years ranged from 5 to 183 nephelometric turbidity units (NTU) for turbidity, 203 to 375 mg/l total hardness as CaCO<sub>3</sub>, 116 to 235 mg/l alkalinity as CaCO<sub>3</sub>, 16 to 46 mg/l chlorides and 8.2 to 8.5 units for pH. Precipitation events were noted to increase turbidity and lower hardness. An analysis of flow duration for the Flint River and source water chemistry would probably indicate that there may be an indirect correlation between turbidity, suspended sediments, and coliforms and high flows associated with spring snowmelt and precipitation runoff events.

In recent years, the Flint WTP has undergone operational and process improvements for water treatment. Raw water quality during these testing periods when the WTP was operating but discharging to waste are noted in the table below.

Date of Tests	Turbidity (NTU)	Total Organic Carbon (mg/l)	pH (pH units)	Alkalinity (mg/l)	Hardness (mg/l)
12/5-7/2000	4.2	8.75	7.8	249	324
1/16-18/2001	2.4	8.5	7.7	275	363
3/20-21-2001	5.4	N/A	7.9	196	266
4/16-18/2001	7.6	8.6	8.2	213	284

## Source Water Assessment Methodology

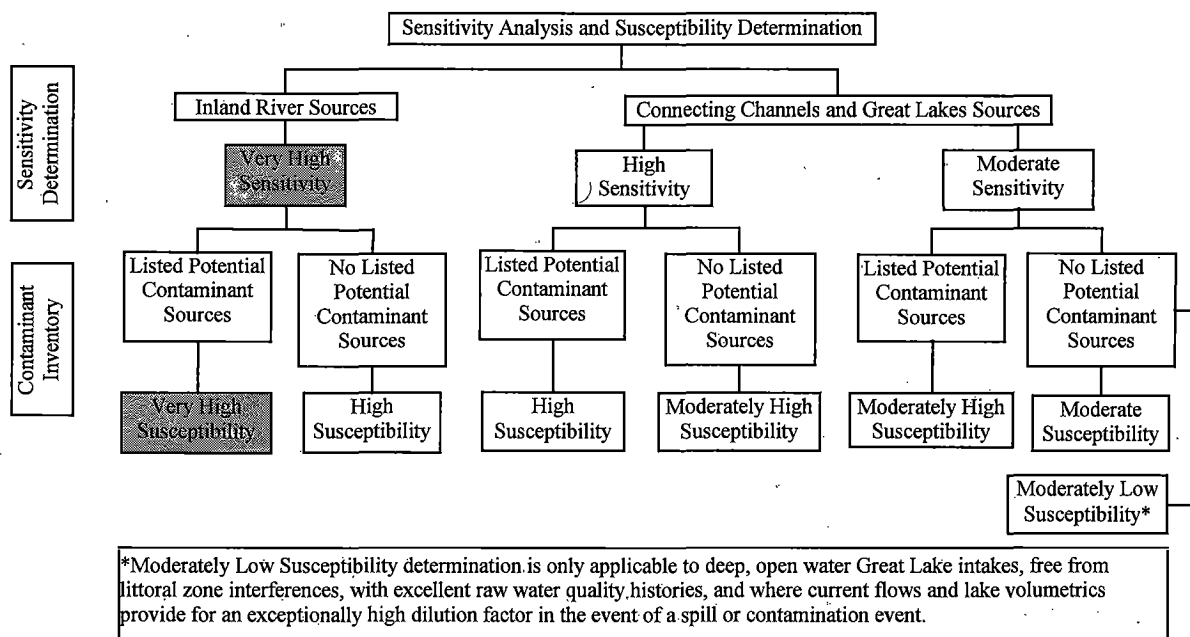
Technical guidelines for completing source water assessments are contained in the Michigan Source Water Assessment Program, Assessment Protocol for Great Lakes Sources (Protocol) (MDEQ, 1999, Appendix L) available at <http://www.deq.state.mi.us/dwr>. In general, an assessment is a process for evaluating a drinking water supply and the potential for its treated water to exceed an MCL due to raw water contamination. A source water assessment considers the SWA, potential sources of contamination within the SWA, conditions of the water supply intake, and susceptibility to contaminants in order to identify potential risks to drinking water quality. Although the Protocol provides the minimum requirements and instructions on how to conduct an assessment, each water supply is unique with respect to how the process is carried out, due to local conditions and information. Sweat and others (2000, 2001) have developed and documented the methodology used in the preparation of this assessment.

## Delineating Source Water Areas

Delineation of the SWA is accomplished by using geographic information system (GIS) software to map the watershed(s) that have the potential to affect source water at the intake. Using information from the water supply, a critical assessment zone (CAZ) is defined for the intake (MDEQ, 1999, Appendix L). A buffer is then created along any shoreline intersected by the CAZ, and from the edge of the CAZ to the mouth of any river(s) that might influence the intake. Finally, the buffer is extended along the shoreline of any river(s) that might influence the intake, from the mouth of the river to its headwaters. The area defined by the CAZ, river and shoreline buffers is termed the susceptible area. The susceptible area within the SWA defines locations where a water supply should focus its management strategies and resources to benefit the drinking water resources.

Using the Great Lakes Protocol and the Flint water supply information:

- The CAZ for the Flint intake is assigned as 3,000 ft since the intake is located in an inland river (fig. 3).
- The susceptible area along the shoreline is determined to be: A distance of 300 ft inland along the banks of the Flint River and its tributaries (fig. 4).



**Figure 53.** Surface-water Source Sensitivity Analyses and Susceptibility Determination for the Ann Arbor Flint emergency water-treatment-plant source-water areas.

## Contaminant Source Inventory

Past, current, and potential future sources of contaminants were inventoried to identify several categories of potential sources of contaminants including microorganisms (bacteria, oocysts, and viruses), inorganic compounds (nitrates and metals), organic compounds (solvents, petroleum compounds, pesticides), and disinfection by-product precursors (trihalomethanes, haloacetic acids).

It is important to remember that sites and areas identified by this process are only potential contaminant sources used and managed properly. In addition, assumptions were made about particular types of land uses and risks associated with those land uses. Assumptions are discussed further in the results portion of this report.

The process for completing the inventory included several steps, which are summarized as follows:

1. Reviewed readily available land use maps and historical/current aerial photographs.
2. Plotted relevant information from applicable state and federal regulatory databases including the following lists:
  - MDEQ leaking underground storage tank (LUST) sites;
  - MDEQ registered underground storage tank (UST) sites;
  - MDEQ Environmental Cleanup Site Information System (ECSI) sites;



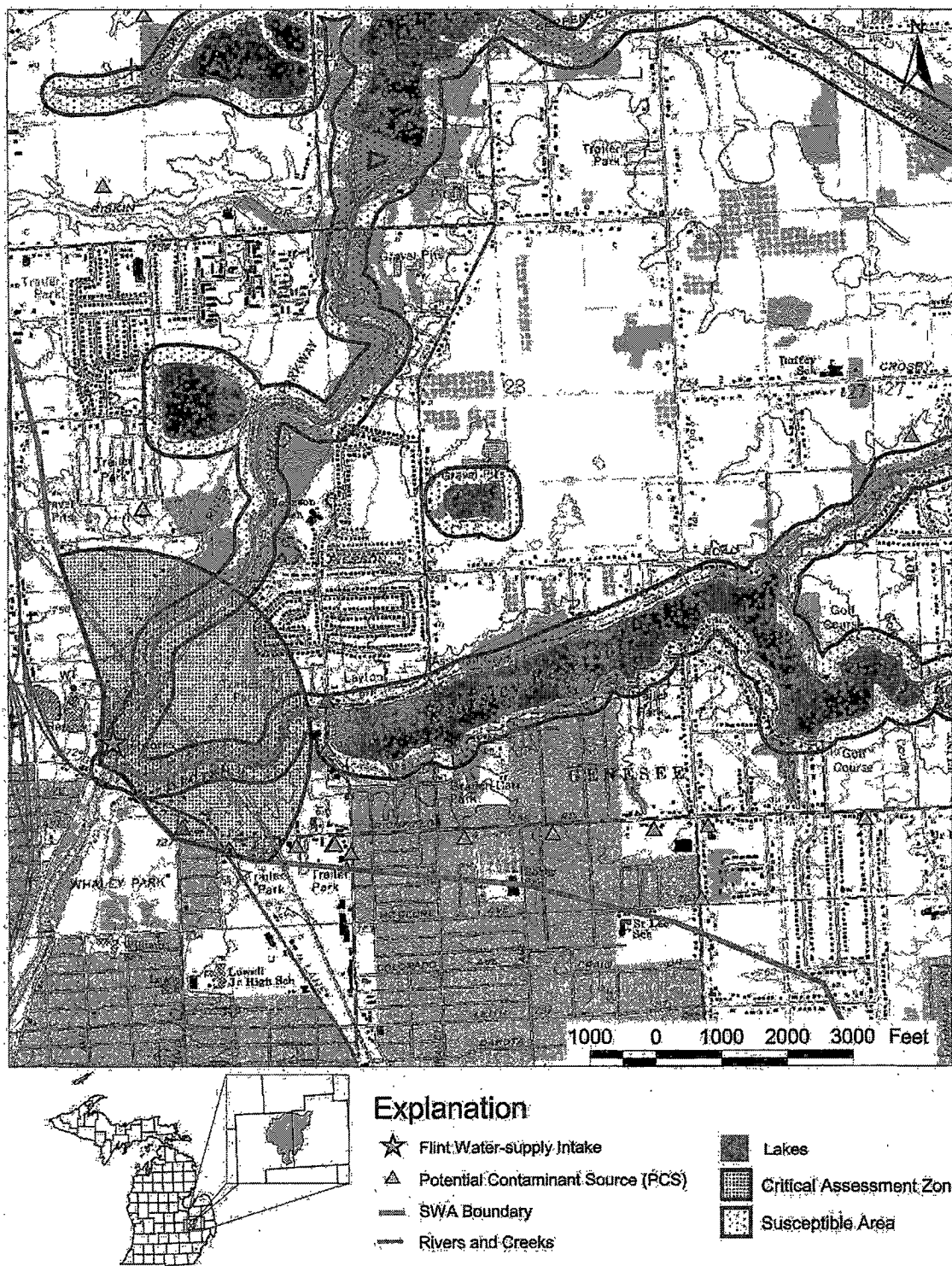


Figure 4. Critical Assessment Zone (CAZ) for the Flint emergency water-supply intake, Flint, MI.

- ·MDEQ Source Information System (for water discharge permit sites including National Pollutant Discharge Elimination System (NPDES) permits, Water Pollution Control Facility (WPCF) permits, storm water discharge permits, and on-site sewage (septic) system permits);
  - ·MDEQ Underground Injection Control (UIC) database;
  - ·MDEQ Active Solid Waste Disposal Permits list;
  - ·Michigan Department of Transportation (MDOT) - Hazardous Materials database;
  - ·State Fire Marshall registry of above-ground fuel storage tank sites;
  - ·State Fire Marshall Hazardous Material Handlers and Hazardous Material Incidents (HAZMAT) sites;
  - ·U.S. EPA BASINS software, version 2.1.
  - ·U.S. EPA Envirofacts database;
  - ·U.S. EPA Resource Conservation Recovery Act (RCRA) generators or notifiers list;
  - ·U.S. EPA RCRA Treatment, Storage, and Disposal Facility (TSDF) Permits list;
  - ·U.S. EPA National Priorities List (NPL);
  - ·U.S. EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLA) List;
  - ·U.S. EPA RCRA Corrective Action Activity List (CORRACTS);
  - ·U.S. Department of Transportation (DOT) Hazardous Materials Information Reporting System (HMIRS);
  - ·U.S. EPA Toxic Chemical Release Inventory System (TRIS); and
  - ·U.S. EPA Oil Pollution Act of 1990 Spill Response Atlas
3. Met with public water supply and community officials on June 11, 2003 to identify potential sources not listed elsewhere in databases or on maps and completed a preliminary inventory form to be used in completing the SWA base map. Subsequent contacts by email and telephone on numerous occasions to request additional data, clarify data, and discuss results.
  4. Land use and/or ownership (for example, residential/municipal; commercial/industrial; agricultural/forest; and other land uses) was mapped and evaluated in relation to PCS, soil characteristics, and proximity to the intake(s).
  5. Conducted an informal field inventory to locate additional PCS.
  6. Completed final inventory form of PCS and plotted locations of PCS on the base map.

The purpose of the inventory is three fold: first, to provide information on the location of PCS, especially those within the susceptible area; second, to provide an effective means of educating the public about PCS; and third, to provide a reliable basis for developing a management plan to reduce potential contaminant risks to the Flint water supply.

The inventory process attempts to identify potential point-source contaminants within the SWA. It does not include an attempt to identify specific potential contamination problems at specific sites, such as facilities that do not safely store potentially hazardous materials. However, assumptions were made about particular types of land use. For example, it is assumed that rural residences associated with farming operations have specific potential contamination sources such as fuel storage, chemical storage and mixing areas, and machinery repair shops. It should also be noted that although the inventory depicts existing agricultural uses (crops grown), these are likely to undergo continual change due to normal crop rotation practices. What is irrigated farmland now may be non-irrigated farmland next year, or vice versa.

The results of the inventory were analyzed in terms of current, past, and future land uses and their relationship to the susceptible area and the supply intake. In general, land uses and PCS that are closest to the supply intake pose the greatest threat to a safe drinking water supply. Inventory results are summarized in table 1, and are shown on figure 5.

Many PCS are readily identifiable because they have a single discharge point, and often a permit is required for these discharges. However, other PCS have diffused, poorly defined discharge locations. These are known as non-point discharges because they occur over large areas and may not be quantifiable by readily accepted methods. These non-point source discharges are difficult to identify and control, and consequently to quantify, yet they are a major source of water pollution (Carpenter and others, 1998). Non-point sources also include atmospheric deposition over water and land, and include urban, rural, and



**Table 1.** Potential contaminant sources in the source water area

Type of Potential Contaminant Source (PCS)	Number of PCS	Number of PCS in Susceptible Area
Hazardous or solid waste site permits	71	11
Industrial facility discharge site permits	9	3
National priority list sites	1	0
Permit compliance system	12	2
Toxic release inventory permits	3	0
<b>TOTALS</b>	<b>96</b>	<b>16</b>

agricultural runoff from areas such as lawns, golf courses, farm fields, pastures, parking lots, and roadways. Runoff from these areas can contain many types of pollutants including sediments, metals, organic and inorganic chemicals, viral and bacterial pathogens, pharmaceuticals, and animal wastes. Transportation also represents a non-point source of contamination. Trucking and railroads transport potential contaminants through the SWA. An accident causing a spill could lead to potential contaminants entering a storm sewer, or in the case of boaters or rail transportation, directly to the Flint River. Petroleum pipeline crossing the upper reaches of the Flint River also pose contaminant threats.

Non-point sources of concern to the Flint water supply are primarily from storm sewers and from industrial, commercial, and residential sources in the SWA and communities upstream of the intake. A railroad bridge immediately upstream in the CAZ of the intake carries occasional train traffic described as hazardous. The West Boulevard storm sewer which discharges in the CAZ provides drainage to the Flint River from an industrialized area.

The Michigan Department of Agriculture is working to identify dairies and concentrated animal feedlots (greater than 1000 animal units) in the Flint River watershed upstream of the intake.



***Railroad Trestle over Flint River Immediately Upstream of Flint WTP***

The U.S. Environmental Protection Agency (USEPA) has identified one impaired water body in the Flint SWA on its Clean Water Act 303(d) list. The parameter of concern within the Holloway Reservoir is fish consumption advisories for PCBs. An additional impaired water body exists upstream of the SWA but not within the SWA itself. This water body is the collective of unnamed drains in Metamora, and the parameters of concern are untreated sewage discharge and pathogens (MDEQ, 2002).

In general, PCS within the susceptible area pose greater risks than those outside the susceptible area. The presence of PCS within the SWA indicates potential sources of chemicals that could, if improperly managed or released, impact the water quality at the intake. Small quantities of these chemicals, in some

# Contaminant Source Inventory for the Flint Emergency Water Supply Intake, Flint, MI

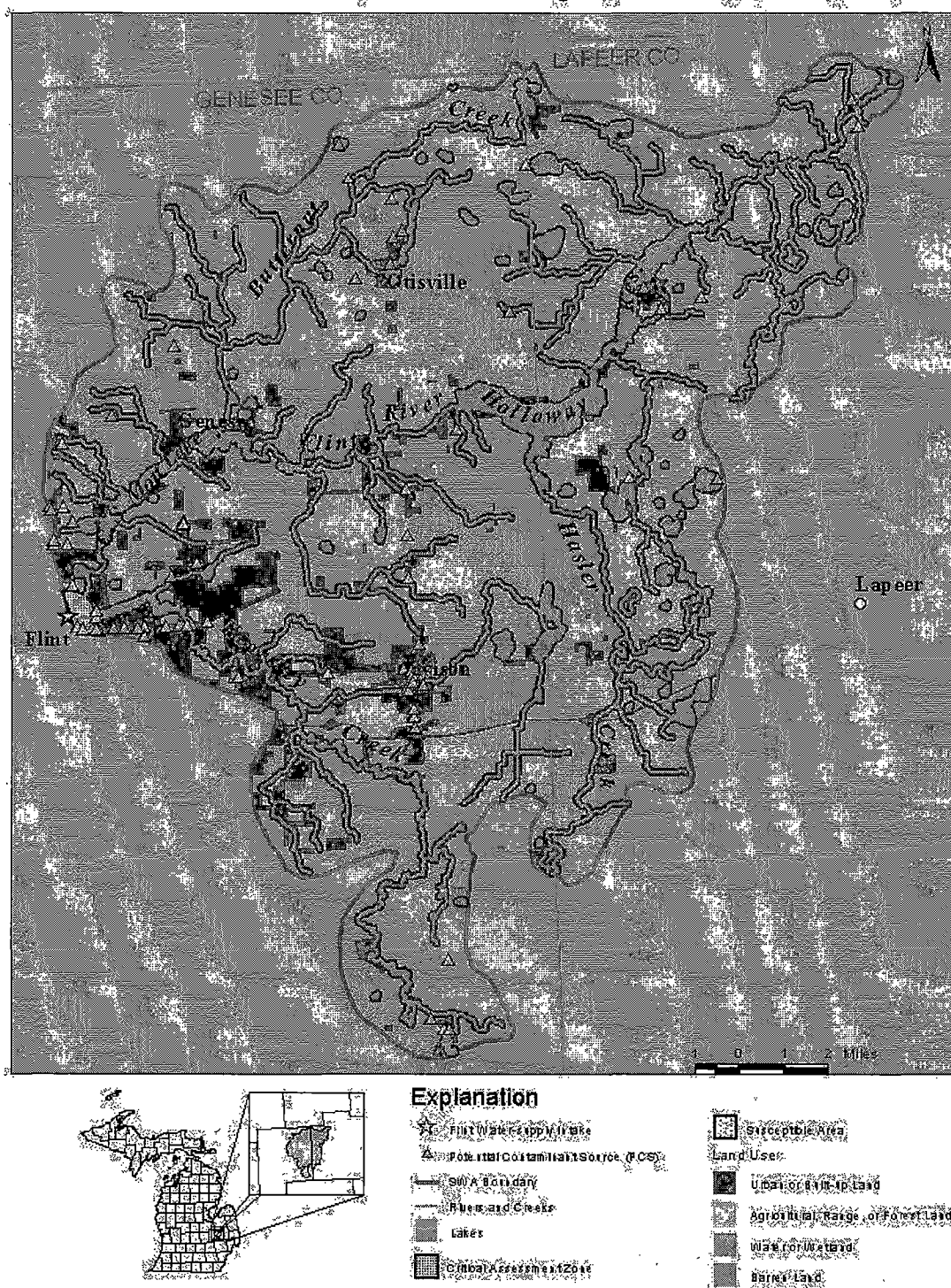


Figure 5. Potential Contaminant Sources in City of Flint Source Water Area, Flint, Michigan

cases less than a liter, can significantly affect the supply. Also of concern is the location and distribution of these sources with respect to highly permeable soils. The susceptible area consists of primarily agricultural and forested land with some urban areas. Overlaying the PCS locations and the moderately rapid to rapidly permeable soil map for the Flint SWA indicates that 21 of the located PCS are located on or very near to areas with moderately rapid to rapidly-permeable soils. All PCS within the SWA should be addressed; the susceptibility determination, however, provides the water supply with the tools to focus resources where the greatest risk occurs. The results of the PCS inventory performed for Flint water supply is shown on figure 5 and is summarized as a function of PCS locations relative to the susceptible area. The inventory results indicate that there are 7 PCS, holding 8 permits for discharge, within the susceptible area (table 2).

**Table 2.** Contaminant source inventory.

Site Name	Identification Number	Reason for Permit	Reason for Listing as Potential Contaminant Source
DAVISON OIL AND GAS BURTON STA 7	MI0000540310	On-Site Storage	Hazardous and Solid Waste Site
H AND M SVC	MID985612225		
KINNIES PARTY STORE	MID985597657		
ZACK CO	MID002975225		
EVERGREEN CLEANERS	MID981539711		
DORT HWY INC	MID985579945		
SUPER GO MARKETERS INC	MID985583053		
PIONEER CABINETRY INC	MID985605849		
DAVISON CITY OF	MID985625136		
MID MICHIGAN AUTO PARTS INC	MID985654789		
CLARK STORE 1849	MI0001853613	Process, Treatment, and Waste Waters	Industrial Facilities Discharge Site
FORD-NORTHVILLE PLT	MI0024643		
FOREST WASTE PRODUCTS	YCRCLA276		
OTISVILLE WWTP <sup>a</sup>	MI0028720	Waste Water, Dust, and Process Water	Permit Compliance System
ORCHARD COVE WWTP	MI0054755		
OTISVILLE WWTP <sup>a</sup>	MI0028720		

Note: Subscript denotes multiple permits

## Sensitivity Analysis

Sensitivity is the natural ability of a SWA to provide protection against the contamination of the water supply intake, and includes physical attributes of lakes, rivers, and soils. The sensitivity analysis requires consideration of several different variables related to the natural environment, for example:

- Water quality history of the source.
- Distribution of moderately to highly-permeable soils.
- Amount of available water from precipitation or runoff.
- Potential for runoff to affect the intake.
- Nature of the intake, including: depth, distance from shore, age, and materials used.
- Surface water flow patterns in vicinity of intake.

To perform this analysis, USGS, MDEQ, and the operator of the Flint WTP collected, researched, and analyzed information from the WTP, monthly operator reports, sanitary surveys, soil maps, published reports, and historical plant operation and raw water quality data. The Michigan SWAP has three categories of sensitivity for surface water sources ranging from moderately sensitive to very highly sensitive. Analysis of this information, using guidelines provided in Brogren (1999) and Sweat and others (2000, in press), indicates that the Flint intake is at the high end of this range or very highly sensitive (fig. 3). This means that the natural environment offers little protection against contamination of the water supply intake.

## **Susceptibility Determination**

Susceptibility is the relative potential for contamination to reach the public water supply intake used for drinking water purposes. Whereas the sensitivity of a water supply is the natural ability of the area to protect the intake against contamination, the susceptibility determination also takes into account other factors that will affect whether a contaminant reaches the intake. Whether or not a particular drinking water source becomes contaminated depends on three factors:

- (1) The distribution of PCS;
- (2) The source water area; and
- (3) The natural protection, or sensitivity, of the source.

In conducting a susceptibility determination, the part of the SWA that yields water to the water supply-system intake is identified by establishment of the susceptible area within the source water area. PCS within the susceptible area are then located. Based on the distribution of PCS within the susceptible area, the type of PCS, and the nature of the chemicals they use or store, PCS are analyzed for the risk they may represent to the water supply intake. Along with the presence and distribution of PCS, the sensitivity analysis is then used to determine the susceptibility of the water supply (fig. 3). This leads to a determination of whether the drinking water source is moderately susceptible, highly susceptible, or very highly susceptible to contamination (Brogren, 1999; Sweat and others, in press). It is important to understand that a system can have low sensitivity relative to some conditions (for example, intake construction and location), and high susceptibility because of other conditions (for example, the type of PCS). In Michigan, surface water sources of drinking water range from moderately-low to very-high susceptibility.

When a public water supply is determined to have a moderate, high, or very high susceptibility because of a particular condition or set of conditions, there is a significant risk of contamination of the drinking water source because of that condition or set of conditions. Although the susceptibility determination does not predict when or if contamination will actually occur, it does recognize conditions that are highly favorable for contamination of the supply. In the event of a contaminant release to soils or surface water within the susceptible area, it is very likely that contamination at the intake would occur without completion of remedial actions.

If a public water supply's drinking water source is determined to be highly susceptible, it is recommended that the system identify the condition(s) that lead to the high susceptibility. Immediate steps should be taken to protect the source, and action should be considered to remedy the condition (for example, repairing or replacing faulty intake construction, working directly with facility operators to implement sound management practices, etc.).

All water supplies, regardless of their susceptibility, should consider identified factors that could lead to higher susceptibility in the future, and should prepare a strategy to protect the water supply source. Raising public awareness through signs and other education programs, encouraging proper intake construction and the use of best management practices in existing facilities are good ways of ensuring that a surface water source maintains its moderate susceptibility rating.

## **Summary and Recommendations**

The actual susceptibility of the drinking water source of a water supply depends on a number of contributing factors, some of which are only slightly related. Sensitivity is determined from the natural setting of the source and identifies the natural protection afforded to the source water. Susceptibility is determined by identifying those factors within the community's SWA that may pose a risk to the source water. The susceptibility determination provides information with respect to facilities within the SWA or

land areas within the SWA that should be given greater priority and oversight in the implementation of a drinking water protection program.

**Sensitivity Analysis:** Based on criteria adopted in the Great Lakes Protocol of the Michigan Source Water Assessment Program, the emergency intake for the Flint Water Treatment Plant has a very high degree of sensitivity to potential contaminants.

**Susceptibility Determination:** The SWA for the Flint intake includes 8 listed potential contaminant sources within the susceptible area, numerous storm drains discharging upstream of the intake, a railroad crossing plus urban, agricultural, and industrial runoff from the Flint River watershed. Combining these potential contaminant sources with the very highly sensitive intake yields a very highly susceptible determination for Flint source water (fig. 5).

**Effective Treatment:**

The results of this assessment and the recommendations based on these results are summarized as follows:

- ***Intake*** - The Flint Water WTP intake was installed in 1948 and draws water from the Flint River from a shoreline structure making the intake very highly sensitive.
- ***Soils*** - Using a mean, area-weighted, depth-integrated permeability estimation, the soil and subsoil permeability in the SWA range from 0.6 in/hr to as much as 7.7 in/hr. The mean permeability is 3.1 in/hr (Schneider and Erickson, undated, series of 5 maps; BASINS, 1998; MIRIS, 2000). About two thirds of the soils in the Flint SWA are moderately rapid or rapidly permeable. Sixteen (16) PCS are located on these soils. These factors combine to make the SWA, and thus the intake, very highly sensitive. The community should take steps to evaluate current and future land use in areas of highly permeable soils, particularly those occurring within the susceptible area. Those PCS that have been identified either on or in close proximity to these soils should be informed of the sensitive nature of the area and encouraged to adopt best management practices designed to minimize the risk of a ground release. Residential areas that have been developed on these soils should be targeted for educational programs identifying steps that residents can take to protect the water supply.
- ***Historical Contaminant Detections*** - Since the Flint WTP has not utilized the Flint River since 1967 as a source of public drinking water, extensive raw water quality data is not available. However, as is typical for river water, the periodic presence of coliform bacteria is indicative of a relationship between runoff and soil conditions, causing the presence of bacteria at detectable levels in river source water. Background turbidity has recently been reported in the range of 2.4 to 7.6 NTU. These factors indicate that the SWA, and thus the intake, is very highly susceptible.
- ***Sanitary Survey*** - Defects reported as requiring repair either have been corrected or are scheduled for repair. The Flint WTP is undergoing extensive upgrades to improve treatment and reliability. It is important that the water supply continue to follow good management practices.
- ***Potential Contaminant Sources*** - A review of the PCS inventory and the rapidly and very rapidly permeable soil distribution indicates that the Flint SWA has 21 PCS located on moderately rapid to rapidly permeable soils. Within the susceptible area, there are 7 PCS with 8 discharge permits. In addition, there are numerous storm drains within the vicinity of the intake. A railroad crossing immediately upstream of the intake also poses a potential contaminant threat. It is recommended that the community focus initially on PCS that are within the susceptible area as they pose the greatest potential threat to the water supply. These facilities should be made aware of free technical assistance that is available through MDEQ's pollution prevention programs. Through chemical inventory, waste reduction, and by increasing awareness of best management practices, the risk these facilities pose to source waters can be reduced. The PCS inventory indicates that the source is very highly susceptible.
- ***Source Water Assessment*** - The Flint source water assessment is based on these site-specific parameters:

1. Definition of a Critical Assessment Zone around both intake for a very highly sensitive source;
  2. Definition of a SWA for the Flint River, and shoreline near the intake;
  3. Flow duration and discharge in the Flint River upstream of the intake, and the effects of upstream contaminant discharges on the source water quality; and
  4. Listed and nonlisted potential contaminant sources.
- **Source Water Protection** - The City has initiated source water protection activities with an Industrial Pretreatment Program incorporating management plans, chemical containment, and spill response, spill response training, plus storm sewer and street cleaning programs.

The Flint WTP and/or the community should assemble a team to assist in the development and implementation of a source water protection program that uses this assessment to further protect the Flint source water area.

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## **GLOSSARY**

Critical Assessment Zone (CAZ) - the area from the intake structure to the shoreline and inland, including a triangular water surface and a land area encompassed by an arc from the endpoint of the shoreline distance on either side of the on shore intake pipe location

Geographic Information System (GIS) - a system to capture, store, update, manipulate, analyze, and display all forms of geographically referenced information

Impaired water bodies - As defined by USEPA and listed on the 303 (d) list of the federal Clean Water Act.

Intake - the point at which source (raw) water is drawn into a pipe to be delivered to a water treatment plant

Lignins - an amorphous, cellulose-like, organic substance that acts as a binder for the cellulose fibers in wood and adds strength and stiffness to cell walls

Maximum Contaminant Level (MCL) - the maximum permissible level of a contaminant in water that is delivered to any user of a public water system

Potential Contaminant Sources (PCS) - listed and non-listed agricultural sites, businesses, and industries that have the potential to cause contaminants to be introduced into source water

Sensitivity - a measure of the physical attributes of the source area and how readily they protect the intake from contaminants

Source - the water body from which a water supplier gets its water

Source Water Area (SWA) - the land and water area upstream of an intake that has the potential to directly influence the quality of the water at the intake

Source Water Assessment Program (SWAP)- in Michigan, the process defined by the state Department of Environmental Quality to complete assessments of all the state's public water supplies

Susceptibility - the Susceptibility identifies factors that may pose a risk within the community's SWA

Susceptible Area - the area defined by the critical assessment zone and a buffer on either side of any drainages that contribute water to an intake

Synthetic Organic Contaminants (SOC) - Manmade organic chemical compounds such as pesticides, etc.

Tannins - naturally occurring phenolic compounds that precipitate proteins, alkaloids, and glucosides from solution that has a yellowish appearance

Volatile Organic Contaminants (VOC) - Unnatural, volatile organic chemical compounds such as gasoline components, solvents, degreasers, etc

**Olszewski, Rosemarie (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, February 06, 2015 12:57 PM  
**To:** emurphy@cityofflint.com  
**Subject:** RE: Water Supply Sources

Elizabeth,

Yes, a source water assessment was completed for the Flint River and a report is available. I will send it to you asap (later today or on Monday).

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, February 06, 2015 11:01 AM  
**To:** 'emurphy@cityofflint.com'  
**Subject:** FW: Water Supply Sources

Elizabeth,

Below is a link to our website that lists all of surface water systems in Michigan. You will need to scroll down to the bottom of the list to see the listing of supplies using a river as their source. Also, I am not aware of any source water assessment conducted for the Flint River watershed; however, I would like to confirm that. I will let you know asap once I obtain the confirmation.

[http://www.michigan.gov/deq/0,4561,7-135-3313\\_3675\\_3691-9775--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3691-9775--,00.html)

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817





RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF TREASURY  
LANSING

R. KEVIN CLINTON  
STATE TREASURER

February 3, 2015

**FOR IMMEDIATE RELEASE**

[www.michigan.gov/treasury](http://www.michigan.gov/treasury)

**Contact: Terry Stanton, Treasury**  
**(517) 335-2167**

**Dave Murray, Governor**  
**(517) 335-6397**

draft

***Gov. Rick Snyder announces grants helping distressed municipalities with water, public safety, appraisal issues***  
*\$8 million awarded for projects aimed at improving services, quality of life*

LANSING, Mich. -- Gov. Rick Snyder today awarded \$8 million to six municipalities to fund various improvement projects, including water system and street lighting enhancements and technology upgrades through the Financially Distressed Cities, Villages, and Townships Grant Program.

Municipalities are eligible for the grants if they are experiencing one or more conditions indicative of "probable financial stress," as defined by Public Act 436 of 2012, the Local Financial Stability and Choice Act.

"Municipalities receiving this special funding are some of the areas hardest hit by the Great Recession," Snyder said. "I am pleased we can offer funding assistance to help these local governments improve various public services their taxpayers and residents expect and deserve."

Under the grant program, funding may be used to pay for specific projects, services, or strategies that move a city, village, or township toward financial stability. There was \$8 million appropriated for the program with a \$2 million cap, per local unit.

The following communities will receive funding this year, with projects and amounts noted (alphabetical order):

Local Unit	Project Description	Amount
City of Benton Harbor	Complete a property reappraisal to provide updated and accurate assessing records. Additionally, community enhancement through blight management and sidewalk replacement.	\$475,000
City of Benton Harbor	Water system enhancement through water main replacements and fire hydrant repairs.	\$434,960

City of Ecorse	Public safety enhancement through improved street lighting.	\$350,000
City of Flint	Water system enhancement through improved waste management.	\$1,100,000
City of Flint	Water system enhancement through leak detection and pipe assessments.	\$900,000
City of Hamtramck	Complete a property reappraisal to provide updated and accurate assessing records.	\$167,860
City of Hamtramck	Upgrade City Hall security.	\$50,000
City of Hamtramck	Public safety enhancement through improved street lighting.	\$404,600
City of Highland Park	Water system enhancement through meter replacement, leak detection, and system repairs.	\$2,000,000
City of Inkster	Complete a property reappraisal to provide updated and accurate assessing records.	\$73,460
City of Inkster	Water system enhancement through fire hydrant repairs.	\$150,000
City of Inkster	Provide a backup power source for public safety.	\$30,000
City of Inkster	Public safety enhancement through the creation of a multi-jurisdictional narcotic team.	\$240,000
City of Inkster	Public safety enhancement through police officer training.	\$41,970
City of Inkster	Public safety enhancement through the deployment of an additional police officer.	\$320,000
City of Lincoln Park	Public safety enhancement through updated technology.	\$143,490
City of Melvindale	Public safety enhancement through fleet replacement of police vehicles and updated technology.	\$88,000
City of Pontiac	Community enhancement through blight management.	\$125,000
City of River Rouge	Public safety enhancement through improved street lighting. Additionally, infrastructure replacements to City Hall.	\$591,508
Royal Oak Township	Public safety enhancement through improved street lighting	\$86,559
Royal Oak Township	Public safety enhancement of police services.	\$217,593

Applications for the next round of Financially Distressed Cities, Villages, and Townships Grant Program will be available on the Department of Treasury website this spring. Applications must be submitted to Treasury by the close of business on XXX, XXX 31, 2015.

Preference is generally given to applicants from local units in which:

- A financial emergency has been declared in the past five years;
- An approved deficit elimination plan for the general fund is currently in place; or,
- Two or more conditions indicating "probable financial distress" currently exist.

For more information about FDCVT grants, including an application for cities, villages, and townships, visit [www.michigan.gov/revenuesharing](http://www.michigan.gov/revenuesharing).

####

\*Conditions of "probable financial distress" relating solely to school districts are not included as conditions for FDCVT, as school districts are not eligible.

## **Briefing: Grant announcement in Flint**

Tuesday, Feb. 3, 2015, 3-4 p.m.

Haskell Community Center, 2201 Forest Hills Ave. Flint

Governor's communications: Dave Murray, [murrayd1@michigan.gov](mailto:murrayd1@michigan.gov), 517-449-8343

DEQ communications: Brad Wurfel, [wurfelb@michigan.gov](mailto:wurfelb@michigan.gov), 517-230-8006

Treasury communications: Terry Stanton, [stantont@michigan.gov](mailto:stantont@michigan.gov), 517-830-5807

### **Purpose**

The state government is providing support for the Flint government as it addresses issues with its water system. The state on Tuesday is announcing that Flint is receiving two grants totaling \$2 million related to water system improvements through the Financially Distressed Cities, Villages and Townships grant program. DEQ Director Dan Wyant will address ongoing efforts with his agency to test Flint water and explain why the city is facing some of its problems. Senate Minority Leader Jim Ananich, D-Flint, will discuss his appreciation for the ongoing support for the city and its residents.

### **Attending**

- Harvey Hollins, director of the Michigan Office of Urban Initiatives
- Dan Wyant, director of the Michigan Department of Environmental Quality
- Wayne Workman, deputy treasurer, Michigan Department of Treasury
- Jerry Ambrose, Flint emergency manager
- Dayne Walling, Flint mayor
- State Sen. Jim Ananich
- State Rep. Sheldon Neeley
- State Rep. Phil Phelps

### **Agenda**

- |                    |  |
|--------------------|--|
| 3:00 PM – 3:05 PM: | Harvey Hollins announces that Flint has received two grants totaling \$2 million.  |
| 3:05 PM – 3:10 PM: | Dan Wyant discusses the state's ongoing role in monitoring Flint's water and any assistance that has been provided and will continue to be provided. |
| 3:10 PM – 3:15 PM: | Mayor Dayne Walling remarks about appreciation for state assistance.   |
| 3:15 PM – 3:20 PM: | Sen. Jim Ananich remarks about appreciation for state assistance.  |
| 3:20 PM – 3:25 PM: | Rep. Neeley remarks.   |
| 3:25 PM – 3:35 PM: | Harvey Hollins closing remarks, opens floor to media questions.  |
| 3:35 PM            | Event ends, though this might be optimistic.   |

### **Background**

- The quality of Flint water has been a high-profile concern in recent weeks, with residents complaining about the color, taste and smell of tap water since a switch to Flint River water as a temporary source as a pipeline is built to Lake Huron as a water source starting in 2016.
  - Residents have attended meetings with jugs of brownish water.
  - U.S. Kildee has worked with labor and community groups to distribute bottled water.

- Mayor Walling has issued a letter (included below) calling for state and federal assistance for the city, including forgiveness of some \$20 million in debt through the Drinking Water Revolving Loan Fund and calling for the governor to come to Flint personally.
  - Walling also submitted a guest column to the Flint Journal with similar requests.
    - He said the loan forgiveness is needed for the city to upgrade its water treatment process.
  - Governor and Mayor Walling had a telephone conversation on Friday, and the mayor has pledged to work together on solutions.
- Rep. Sheldon Neeley also has sent the governor a letter, saying that his constituents "are on the verge of civil unrest."
- The Department of Environmental Quality has been monitoring the water situation, with a detailed backgrounder and talking points attached below.
- The Treasury Department is announcing Tuesday that Flint is among the cities receiving a combined \$8 million the Financially Distressed Cities, Villages and Townships grant program.
  - The announcement of the other grants will follow the Flint announcement.
    - The Flint grants are \$1.1 million to allow the city to replace the functions of the old incinerator with new water pollution control facility allowing for the disposal of waste to landfills.
    - The other is \$900,000 to allow the city to hire a contractor to perform a leak detection survey, which will lead to prioritizing repairs.
  - A breakdown of the grants is included below.

#### **Treasury breakdown of Flint grants**

Flint Incinerator: The grant project entails shutting down the current Water Pollution Control Facility Incinerator (due to the incinerator not being up to new EPA standards). In order to meet EPA standards, it would cost roughly \$8.8M in upgrades to the current incinerator. The grant funding will allow them to replace the functions of the old incinerator by constructing new facilities which will allow for the disposal of waste to landfills.

##### **Budget Breakdown**

Construction Contractor	\$1,050,000
Project Management	<u>\$50,000</u>
Total	\$1,100,000

Flint Leak Detection: The grant project will allow the city to hire a contractor to perform a leak detection survey of the city water lines. The city will receive a map of leak locations and an assessment of leak severity. This data will allow the city to prioritize leak repair. The project also covers the expense of conducting a water pipe line wall thickness condition assessment on a portion of the city's pipes. The assessment will guide the city's water main replacement program.

##### **Budget Breakdown**

Project Planning	\$90,000
Mobilization of Crew to Site	\$27,000
Leak Detection < 16" diameter	\$378,000

Leak Detection 16" diameter or >	\$270,000
Pipe Condition Assessments	<u>\$135,000</u>
Total	\$900,000

### **DEQ backgrounder on Flint water**

Following the formal approval of Flint into the KWA in 2012, DWSD sent Flint a letter saying their contract was thereby terminated (by early 2013).

Genesee County has been using DWSD water without a contract since May 2014. But Flint took the letter to imply a water cutoff, and promptly turned to DEQ with a proposal to use the Flint River (their historic backup system).

This proposed shift was pitched primarily as a money saver. But it put the city in the business of water production, where they historically had been in the business of water transmission. DEQ approved the use of the river as a source, based on the treatment plant's past performance as a standby facility and the improvements we outlined prior to a switchover.

Several municipalities around the state use surface water supplies (rivers): Blissfield near Monroe, Manistique, and Alma to name a few.

The city completed the upgrades at the water plant the facility and DEQ approved it April 2014.

There were some initial hiccups. Last summer, there were a couple of 'boil water' notices issued. One for a water test that showed e. coli, one for a break in the water main.

The challenge to using the Flint River as a source is that the condition of the water is variable and changes with season and weather. It has substantially more organic matter than deep lake sources like Lake Huron. This organic matter is mobilized by high water events, and warm weather also can account for more organic material in the water.

The treatment of the organic matter is done with chlorine. One might conclude that the continual answer is just to use more chlorine to achieve water safety. However, at some point on the continuum, the chlorine and organic matter create TTHM – total trihalomethanes – as a byproduct. When the standard for those is exceeded over several consecutive quarters of testing, the supply is required by law to issue public notice and submit an approved plan for addressing the situation.

You'll note that this regulatory approach means TTHM testing is done quarterly. That means people who use the system are exposed to TTHM for several months before the public notice is required. It's because TTHM is a chronic health threat. Over the long term (measured in decades), continued exposure can contribute to some known health problems. If this were an immediate health threat, customers would receive immediate notification to boil their water or not use it.

Put in context, the EPA (which established the standard and the rule) estimates the existence of the TTHM standard prevents an estimated 280 bladder cancer cases each year ... out of more than 330 million people who use public water supplies around the country.

It's not "nothing." State and federal law requires quarterly testing for TTHM and that the public be informed of it when the annual average of four quarters' worth of consecutive testing shows TTHM

levels exceeding 80 parts per billion. Flint's results managed to exceed the annual average in three quarters, and they must develop a plan to address it.

But it's not like an eminent threat to public health. Unlike an e. Coli or even total coliform bacteria maximum contaminant level, which require immediate public notification and response and are part of daily / hourly testing of public water supplies, TTHMs pose a public health concern with chronic, long-term exposure.

It's clear the nature of the threat was communicated poorly. It's also clear that folks in Flint are concerned about other aspects of their water – taste, smell and color being among the top complaints.

The Safe Drinking Water Act requires public water supplies be tested for more than 90 regulated contaminants, including microbial contaminants. The act, and the program here in Michigan, work to ensure that water is safe to drink. The act does not regulate aesthetic values of water. Here are some factors affecting the aesthetics of water in Flint.

1. It's the Flint River. The water supplied by DWSD historically came from Lake Huron. It's softer. With hard water, you get a different flavor and feel. It's why General Motors suspended use of Flint Water – it was rusting their parts. Also, there's the 'organics' factor (discussed previously).
2. The system is old. Flint has more than 500 miles of water pipes. More than half of those pipe miles are more than 75 years old. Much of it is cast iron. Hard water can react with cast iron and exacerbates the rusty factor, which creates that brown water that angry residents were holding up in jugs for the media cameras last week. Valve failure has also been a key challenge. The system has an estimated 7,500+ valves. When they stick open or stick shut, it affects the hydraulics of the system and increase areas of stagnation. The city has a backlog of valves that need to be addressed. They've done half a dozen or so since November.
3. Flint is old. Many of the homes served by the system are old. Brown water complaints may also be attributable to cast iron pipes in customers' service connection to the city lines. The DEQ has been encouraging people with water coloration concerns to contact the city and see whether it is the service line or the City's line causing the issue. Again, discoloration is not an indicator of water quality or water safety, but we recognize that nobody likes it.

**In summary**, the City of Flint has tremendous need to address its water delivery system. We are not aware that they have any capital improvement funds for preventative maintenance in place, much less line replacement project monies that will require hundreds of millions.

The City was approved for a Revolving Fund loan in 2008 or 2009. As a Distressed Community, they qualified for flexible terms and 2 percent interest rate Revolving Fund Loan. After they were notified they were approved for the loan, they declined it. Previous SRF loans from the state to Flint bear an outstanding balance of \$20.7 million today.

The DEQ continues working with the city to address the TTHM issue. They can take interim steps – from scrubbing the insides of transmission lines to carefully monitoring the hydraulic challenges in their system – to address customers' aesthetic concerns. Their TTHM numbers already are showing dramatic improvement; the November testing showed only one of seven sample points exceeding the standard.

The key now is that the standard is an average of three quarters' worth of results. It will be some time before they are officially "not in violation." However, depending on weather in 2015, it's not unforeseeable that we will be having this conversation again by next Christmas.

The key to the conversation is that TTHM is not a top health concern. That's key because residents need to understand TTHM in context, and it is key because it appears the mayor has seized on the public panic (sparked, frankly, by their poor communication of the violation notice) to ask the state for loan forgiveness and more money for their infrastructure improvement.

Another key thing to remember is that once the city connects to the new KWA system in 2016, this issue will fade in the rearview.

**Key messages:**

1. The DEQ Drinking Water program works with communities around the state to ensure that municipalities provide customers with clean, safe drinking water.
2. Municipal water supplies are tested rigorously and regularly for more than 90 regulated contaminants, including microbial contaminants that pose an immediate public health concern.
3. Flint's exceedance of the TTHM standard should reassure residents that the testing program is effective.
4. TTHM is not an immediate health threat. It is a chronic concern, one that can be problematic over the course of several decades of exposure. The public was notified because the law requires the city to make public notification, so that everyone can make informed decisions. This is particularly true for people with infants or those with compromised immune systems.
5. The DEQ is working with the City to address the situation. Recent tests show the TTHM numbers dropping rapidly. The department will continue working with the city in the months ahead, and residents should feel confident that their water is safe to drink unless the DEQ or City notifies them otherwise.
6. The discoloration and odor issues some Flint residents are experiencing are separate issues from the TTHM issue. TTHM is odorless, colorless and measured in parts per billion.
7. Flint water customers who have questions or concerns about their water should first contact the city to get answers and help. They also can contact the Michigan DEQ.

**Mayor Walling's Facebook post**

Friend,

Access to clean, safe, affordable water is a basic human right.

That's why I just sent Gov. Snyder my Flint Water Improvement Plan. It focuses on the areas of safety, quality, access, investment and education. My letter urges the governor to quickly implement these ideas so that Flint's water is 100% safe.

Please contact Gov. Snyder by calling (517) 335-6397 (or by clicking [here](#)) and ask him to take action immediately to implement my plan and ensure Flint's water is safe.

My plan offers new ideas and also builds on successful models of utility, energy and assistance programs at the state and federal levels. Here is my plan:

**Safety & Quality**

- 100% Safety is the standard

- City of Flint releases testing data to assure safety and expands testing to households with support from the Michigan Department of Environmental Quality
- Support alternatives for those advised not to drink the water by their doctors through the Michigan Health Endowment Fund and community partners to protect the vulnerable like seniors and infants
- Bring on experienced river water treatment operational management in the City of Flint
- Require water testing data to be released quarterly by law in all Michigan communities

#### Access

- Announce an amnesty program for turn-ons and reduce the turn-on cost in Flint
- Develop a revised payment plan policy to allow customers to come back on to the Flint system
- New Federal and State partnership to establish new Drinking Water Emergency Assistance Fund for customers (modeled on Federal and State energy utility programs: Low Income Home Energy Assistance Program; Michigan Energy Assistance Program; State Emergency Relief)

#### Investment

- Accelerate water system improvements outlined in the City of Flint Capital Improvement Plan through Federal and State Investments
- State approves City of Flint's Distressed Cities Fund applications
- Federal and State forgiveness of payment to Drinking Water Revolving Loan Fund
- Federal and State financing for future improvements
- City Water Department implements budgeted FY15 projects including leak detection, valve repairs, new pipes and meter replacements

#### Education

- Develop a community partnership to provide household and business customers with information on testing and conservation
- Ongoing partnership with Michigan Department of Human Services, United Way, Salvation Army and community organizations to provide information on water assistance
- Expand youth energy initiative to assist households with conservation and efficiency (piloted in summer 2014 with Northwestern High School students, EcoWorks and Consumers Energy)

The struggle with our water has gone on for too long. The state must take action and do its part. Please ask Gov. Snyder to take action immediately to implement my plan and ensure Flint's water is safe. Thank you for your ongoing support.

#### Links to coverage

- [Mayor, governor have 'long, productive' talk about Flint's water problems](#), Jan. 30
- [2,000 more gallons of water headed to Flint for giveaway](#), Jan. 30, 2015
- [Flint emergency manager says there are two big reasons not to reconnect Detroit water](#), Jan. 29
- [Flint Democracy Defense League plans four meetings on city's water problems](#), Jan. 29
- [Environmentalist sends out new warnings about Flint water](#), NBC, Jan. 27
- [Erin Brockovich says on Facebook she's prepared to come to Flint](#), MLive, Jan. 27
- [Mott Community College not waiting for Flint to ensure safe water](#), MLive, Jan. 26
- [Detroit water chief says she's willing to sell emergency water to Flint -- no strings attached](#), Jan. 26
- [Mayor says governor needs to visit Flint to see water crisis first hand](#), MLive, Jan. 26
- [Need water? Flint groups collect 600 cases, plan distribution this week](#), MLive, Jan. 26



- Incoming Flint water expert would have 'continual oversight' until new pipeline connected, Jan. 25
- Looking back at Flint's water problems (photo gallery), MLive, Jan. 25
- Flint water problems: Switch aimed to save \$5 million -- but at what cost?, MLive, Jan. 23
- State says its already 'working diligently' on Flint's water problems, MLive, Jan. 22
- Officials say Flint water is getting better, but many residents unsatisfied, MLive, Jan. 21

**Olszewski, Rosemarie (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Monday, February 09, 2015 2:36 PM  
**To:** Michael Glasgow  
**Subject:** RE: January '15 MOR

ok, thanks.

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Monday, February 09, 2015 2:00 PM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Re: January '15 MOR

Adam,

I'm just about finished with it, just finishing up with some of the operational chemical feed data, I will send a pdf copy to you tomorrow when it will be fully complete. Attached is what I have done so far.

Mike

On Mon, Feb 9, 2015 at 1:20 PM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Hi Mike, any chance you have your January MOR ready? I need a copy, EPA is asking for some data as they are getting calls. Please send what you have.

thanks,

Adam Rosenthal, EQA

MDEQ – Office of Drinking Water and Municipal Assistance

Lansing District – Constitution Hall 1SW

PO Box 30242

Lansing, MI 48909

517-284-6644

fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:

[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**Olszewski, Rosemarie (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Monday, February 09, 2015 1:21 PM  
**To:** Mike Glasgow  
**Subject:** January '15 MOR

Hi Mike, any chance you have your January MOR ready? I need a copy, EPA is asking for some data as they are getting calls. Please send what you have.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**Thelen, Mary Beth (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, June 09, 2015 12:39 PM  
**To:** Howes, Sarah (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ)  
**Cc:** Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015  
**Attachments:** Flint VN TTHM 6\_9\_15.pdf

Attached is a copy of the Violation Notice and Public Notice Template being mailed to the City of Flint by the DEQ Office of Drinking Water and Municipal Assistance regarding an exceedance of the Maximum Contaminant Level (MCL) standard for Total Trihalomethanes at certain locations within the City's drinking water distribution system.

This violation notice is in response to updated monitoring completed in May 2015, which shows the locational running annual average for one of the City's eight compliance sampling locations continues to exceed MCL standard of 0.080 mg/L. It is however, important to note that all individual compliance sample results collected in both May and February were below the 0.080 mg/L levels.

You are being provided an electronic copy of this notice as exceedance of this drinking water standard is expected to generate inquiries from water system customers, news media, and the general public.

Sarah Howes or Maggie Pallone will be informing members of the Michigan legislature.

If you have any questions or would like any additional information, you may contact Michael Prysby, District Engineer, DEQ-ODWMA at 517-290-8817, or you may contact me at the number below.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

June 9, 2015

Mr. Brent Wright, Operations Supervisor  
City Of Flint – Department of Public Works  
Flint Water Plant  
4500 North Dort Highway  
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice (VN) – Maximum Contaminant Level for Total  
Trihalomethanes (TTHM)  
2nd Quarter 2015 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the city of Flint (City) is in violation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels for disinfection byproducts (MCLs)*, of the 1979 Administrative Code.

In accordance with R 325.10610, *MCLs*, of the 1979 Administrative Code, the MCL for disinfection byproduct TTHM is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City's highest TTHM LRAA, based on the last four quarters, ending June 30, 2015, is 0.094 mg/L which exceeds the standard, and at this time only one of the eight sample site locations exceed the LRAA standard of 0.080 mg/L.

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on June 1, 2015, and will continue until the TTHM LRAA is below the MCL at all sample sites.

TTHM Results (mg/L)	8/21/14	11/20/14	2/17/15	5/18/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	<b>0.145</b>	0.059	0.0162	0.0514	0.068	0.044
DBP2 Liquor Palace 3302 South Dort Highway	<b>0.127</b>	0.033	0.0168	0.0635	0.060	0.044
DBP3 North Flint Auto 6204 North Saginaw St.	<b>0.118</b>	0.041	0.0149	0.0452	0.055	0.037
DBP4 University Market 2501 Flushing Road	<b>0.196</b>	<b>0.094</b>	0.0245	0.0598	<b>0.094</b>	0.059
DBP5 Taco Bell 3606 Corunna Road	<b>0.181</b>	0.034	0.0151	0.0547	0.072	0.040
DBP6 Rite-Aid Pharmacy 5018 Clio Road	<b>0.144</b>	0.054	0.0192	0.0605	0.069	0.048
DBP7 Salem Housing 3216 MLK Boulevard	<b>0.112</b>	0.050	0.0285	0.0727	0.066	0.056
DBP8 BP Gas Station 822 South Dort Highway	<b>0.112</b>	0.036	0.0199	0.0461	0.054	0.037

We are encouraged by the results from the most recent round of compliance samples collected on May 18, 2015, which again show individual TTHM levels below 0.080 mg/L at all locations throughout the City's system. Operational Evaluation Reports from December 2014, February 2015, and May 2015, have identified possible causes and corrective measures for the previous elevated TTHM levels which we encourage the City to continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported for the most recent quarter in comparison to levels in May 2014, and suggest the City may be able to achieve compliance with the TTHM standard at all sites by continuing these efforts.

Our office is currently reviewing the Operational Evaluation Report dated May 29, 2015, and will provide the City and their consultant with comments, as needed, to help address this MCL violation.

Further, the TTHM operational evaluation level (OEL) calculated in accordance with R 325.10719l, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, is now below the 0.080 mg/L operational evaluation trigger at all eight sample site locations. However, our office is requesting that an operational evaluation again be conducted incorporating the most recent sample results, given the increase in TTHM levels from February 2015 results, and that the next monitoring period of August has been identified as the City's peak month for TTHM levels. **Please provide our office with an updated Operational Evaluation Report by Monday, August 31, 2015.**

If you have any other factual information you would like us to consider regarding the violation identified in this VN, please provide them in a written response by June 23, 2015.

Mr. Brent Wright

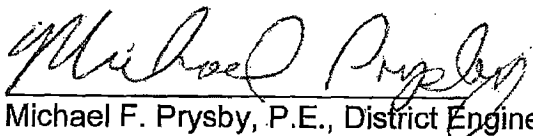
3

March 5, 2015

Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN which contains the minimum required language. The City is encouraged to include additional information regarding its response efforts to this violation. **Please notify your consumers by July 1, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the PN.** This violation must also be included in your 2015 Consumer Confidence Report, due by July 1, 2016. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below; at prysbym@michigan.gov; or rosenthala@michigan.gov; or at DEQ, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,



Michael F. Prysby, P.E., District Engineer  
Lansing District Office  
Office of Drinking Water and  
Municipal Assistance  
517-290-8817



Adam Rosenthal, Environmental Quality  
Analyst  
Lansing District Office  
Office of Drinking Water and  
Municipal Assistance  
517-284-6644

Enclosure

cc: Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5  
Mr. Robert Bincsik, City of Flint  
Mr. Howard Croft, City of Flint  
Mr. Michael Glasgow, City of Flint  
Genesee County Health Department  
Ms. Liane Shekter Smith, DEQ  
Mr. Richard Benzie, DEQ  
Mr. Stephen Busch, DEQ



## IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

### City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (August 21, November 20 of 2014, and February 17 & May 18 of 2015). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the MCL. The standard for TTHMs is 80 micro grams per liter ( $\mu\text{g/L}$ ). The location reporting the highest TTHM level was 94  $\mu\text{g/L}$ ; thus, our water system exceeds the TTHM MCL.

#### What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

#### What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

*People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.*

#### What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015. Our most recent individual sample results were all less than the 80  $\mu\text{g/L}$  standard, however since compliance is calculated using a locational running annual average (LRAA) of the most recent four quarters, we are still out of compliance with the MCL at one of eight locations.

For more information, please contact Mr. Brent Wright at 517-787-6537, or the Flint Water Plant at 4500 North Dort Highway, Flint, Michigan 48505.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by the City of Flint.

---

#### CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

---

Signature	Title	Date Distributed
Reminder to water supplier: This notice/certification must be sent to the Department of Environmental Quality.		

**Olszewski, Rosemarie (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Tuesday, May 12, 2015 4:33 PM  
**To:** Mike Glasgow  
**Subject:** distribution WQPs

Good afternoon Mike, we did not receive a 2<sup>nd</sup> half 2014 water quality parameters in the distribution system for the City of Flint. Please email me a copy when you get this.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**Olszewski, Rosemarie (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, April 03, 2015 11:55 AM  
**To:** Michael Glasgow; 'bwright@cityofflint.com'  
**Subject:** Flint MORs

Mike, Brent

I was looking at Flint's MORs and I just noticed that ozone treatment parameters (ozone dosage and residuals) are not included. Ozone treatment parameters need to be included in the MOR. Please include this in future MORs. Also, if you can resurrect the ozone treatment parameters from previous months of operation (since going to the Flint River).....we would like that information to include in the previous MORs. Thanks.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

---

**Olszewski, Rosemarie (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, May 01, 2015 12:17 PM  
**To:** Prysby, Mike (DEQ); gthomas@cityofflint.com  
**Subject:** RE: Premise plumbing  
**Attachments:** Final Genesee supplemental questionnaire 2-23-15.docx

Glen,

The attached questionnaire that would be utilized by the Local Health Department and Department of Health and Human Services provides additional detail of what to be on the lookout for (See Questions 12 and 13). As we indicated almost every service connection could potentially have some element associated with what is listed in this questionnaire, but we are just looking for a rough list of those with more non-typical appurtenances such as spas, grocery stores with spray/mist system, garden/nurseries with mist irrigation, etc., and those that Mike provided. Thanks.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, May 01, 2015 9:56 AM  
**To:** [gthomas@cityofflint.com](mailto:gthomas@cityofflint.com)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** Premise plumbing

Glen,

Based upon our discussion during our April 29<sup>th</sup>, 2015 site visit, approximately 40-45 commercial/industrial customers were identified as a potential candidate for needing a premise plumbing Water Safety Plan (WSP). Attached is a list of mechanical components within building premise plumbing to assist you in confirming this and/or identifying additional customers that could serve as WSP candidates. Please send us your completed list at your earliest convenience. Thanks.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**Legionellosis Questionnaire  
Genesee County, 2014-2015**

**Interviewer Identification**

Date of Interview: \_\_\_\_\_ Interviewer's Name: \_\_\_\_\_

Health Dept.: \_\_\_\_\_ Phone Number: \_\_\_\_\_ E-mail: \_\_\_\_\_

What was the patient's outcome? ☐ RECOVERED ☐ STILL ILL ☐ DIED ☐ UNK**Patient Contact Information**Name: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: ☐ M ☐ F

Street address: \_\_\_\_\_ City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_ County: \_\_\_\_\_

Daytime Phone: \_\_\_\_\_ Evening Phone: \_\_\_\_\_

**Surrogate Contact Information** <List surrogate contact information if patient is too unwell or has died>

Name: \_\_\_\_\_

Daytime Phone: \_\_\_\_\_ Evening Phone: \_\_\_\_\_

Relationship to Patient: \_\_\_\_\_

Hello, my name is \_\_\_\_\_ and I'm calling from \_\_\_\_\_ (health department).

We are investigating a cluster of respiratory illnesses in Genesee County. At this point, the source of these illnesses is still under investigation. We are hoping this interview will provide further information and answers about the illnesses. I'd like to ask you a few questions about your home and your exposures during the 2 weeks before you got sick. You do not have to answer any of the questions, but any assistance you can provide is appreciated. Do you have about 30 minutes to talk? If not now, when would be a good time for me to call back? \_\_\_\_\_

&lt;If the case is from more than 1 month prior, the following text may be used: &gt;

It might be helpful for you to collect documents such as a calendar, receipts, credit card or bank statements to jog your memory about your activities and where you were in the 2 weeks prior to getting sick. The only information we would ask you to share from these are dates and locations. Would you like me to call you back after you have time to collect these materials? When would be a convenient day and time for me to call you back? \_\_\_\_\_

I have that your first symptom started on &lt;insert onset date&gt; \_\_\_\_\_. Is this correct?

☐ Yes ☐ No ☐ Not sure

If no, what was the first date you started feeling sick? \_\_\_\_/\_\_\_\_/\_\_\_\_

List dates of exposure period: from \_\_\_\_/\_\_\_\_/\_\_\_\_ to \_\_\_\_/\_\_\_\_/\_\_\_\_ &lt;The exposure period includes the 2 weeks before the date of illness onset&gt;

**Illness Information**

1.) During your illness, did you have any of the following symptoms?

	Check one:		
	YES	NO	UNK
Diagnosis of pneumonia			
Fever If yes, highest temp:			
Chills			
Cough			
Nausea			
Vomiting			
Diarrhea			
Aches or muscle pains			
Chest pain			
Shortness of breath			
Sore throat			
Headaches			
Other symptoms ( <i>specify</i> ):			

**Exposure Information**

2.) How long have you lived at your current residence? \_\_\_\_\_

*<If they have moved since the listed exposure period, indicate that you are asking about the house they lived in prior to becoming sick>*

a.) If you moved after the exposure period/illness, what was your previous residence address? \_\_\_\_\_

3.) Where did you get your tap (drinking and other household use) water from between \_\_\_\_/\_\_\_\_/\_\_\_\_ and \_\_\_\_/\_\_\_\_/\_\_\_\_? *<Exposure period from above>*

- ☐ 1. City of Flint Water  
☐ 2. City of Flint Township Water  
☐ 3. Other municipal water system  
☐ 4. Private well  
☐ 5. Unknown  
☐ 6. Other \_\_\_\_\_

4.) During the last year, has the water pressure at your residence changed? ☐ Yes ☐ No ☐ Not Surea.) If yes, did the water pressure: ☐ Increase ☐ Decrease

b.) If yes, when did the water pressure change occur? \_\_\_\_\_

5.) During the last year, has the water quality (appearance, taste, smell) at your residence changed?

☐ Yes ☐ No ☐ Not Sure

a.) If yes, please describe the change in the water quality: \_\_\_\_\_

b.) If yes, when did the water quality change occur? \_\_\_\_\_

6.) Prior to your illness, did you make any recent plumbing changes or repairs at your residence?

☐ Yes ☐ No ☐ Not sure

a.) If yes, please describe the changes/repairs and give the dates the work was done.

\_\_\_\_\_  
\_\_\_\_\_

7.) Prior to your illness, were there any water main breaks or other water line issues that affected the water at your residence, including boil water advisories? ☐ Yes ☐ No ☐ Not sure

a.) If yes, please describe the water main/line issues or boil water advisories and give the dates they occurred.

\_\_\_\_\_  
\_\_\_\_\_

I'd like to ask you some questions about what you did during the 2 weeks before you got sick.

The time period I'm asking about is between \_\_\_\_/\_\_\_\_/\_\_\_\_ and \_\_\_\_/\_\_\_\_/\_\_\_\_. <Exposure period>

During this 2 week period, did you:

8.) Work or volunteer, either full or part time? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Job description	Company	Location	Any exposure to misty water?

9.) Spend any time in a hospital, doctor's office, clinic, or dentist office as a patient, visitor, employee, or volunteer? ☐ Yes ☐ No ☐ Not sure

a.) If yes, check all that apply:

Exposure	Date(s)	Reason for Visit	Name & City of Hospital/ Office/ Clinic	Name of Doctor
Inpatient <input type="checkbox"/>	Admission _____ Discharge _____			
Outpatient <input type="checkbox"/>				
Visitor <input type="checkbox"/>				
Employee <input type="checkbox"/>				
Volunteer <input type="checkbox"/>				

10.) Visit, reside, or work in a long term care facility, nursing home, assisted living facility, or senior living facility? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Exposure	Date(s)	Name & City of Facility
Resident <input type="checkbox"/>		
Visitor <input type="checkbox"/>		
Employee <input type="checkbox"/>		

11.) In the 2 weeks before you before you got sick ( \_\_\_ / \_\_\_ / \_\_\_ to \_\_\_ / \_\_\_ / \_\_\_ ), did you spend any nights away from home (excluding healthcare settings)? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table: <prompts: hotel, campground, cabin, cruise, second home, with family, etc.>

Accommodation Type/Name	Address Street, City, State	Floor/Room No.	Dates of Stay	
			Arrival	Departure

12.) In the 2 weeks before you before you got sick ( \_\_\_ / \_\_\_ / \_\_\_ to \_\_\_ / \_\_\_ / \_\_\_ ), did you visit any of the following community venues?

Venue	Check one:			Date(s)	Name of Venue	Address
	YES	NO	UNK			
Hotel ( <i>without</i> staying overnight – e.g. dinner, wedding)						
Auditorium						
Barbershop or Hair salon						
Car wash						
Casino						
Church or Place of worship						
Gym or Work out facility						
Grocery store						
Home improvement store						
Spa or Nail salon						
Mall or Department store						
Movie theater						
Other ( <i>specify</i> )						



13.) In the 2 weeks before you before you got sick (\_\_\_\_/\_\_\_\_/\_\_\_\_ to \_\_\_\_/\_\_\_\_/\_\_\_\_), did you have exposure to any of the following water sources, either **at home** or while **away from home**?

Exposures <b>at home</b>	Check one:			Dates (s)	Description: Name (or Type)/Location
	YES	NO	UNK		
Shower					
Use a detachable shower head or hose					
Hot tub, whirlpool spa, Jacuzzi tub					
Sat NEAR a working hot tub or whirlpool spa but did not get in					
Steam room or wet sauna					
Humidifier (whole house or portable)					If yes, specify type: If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other: _____
Respiratory therapy machine (e.g. nebulizer, CPAP, BiPAP, etc.)					If yes, specify type: If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other: _____
Other (specify)					

Exposures <b>away from home</b>	YES	NO	UNK	Dates (s)	Description: Name (or Type)/Location
Shower at gym, work, other location					
Use a detachable shower head or hose					
Hot tub, whirlpool spa, Jacuzzi tub					
Sat NEAR a working hot tub or whirlpool spa but did not get in					
Humidifier (whole house or portable)					If yes, specify type: If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other: _____
Pool/splash pad/waterpark					
Recreational or cooling misters					
Steam room or wet sauna					
Decorative fountain					
Outdoor watering hose or sprinkler					
Beach, lake, pond, river, creek, etc.					
Other (specify)					

**Medical History**

Now I'm going to ask a few questions about your medical history and health behaviors.

14.) Have you ever been told by a healthcare provider that you had any of the following conditions:

Condition	Check one:			Comments
	YES	NO	UNK	
Chronic kidney disease				
Weakened immune system (due to cancer, chemotherapy, radiation therapy, immunosuppressive meds, HIV, organ transplant, etc.)				
Diabetes				
Chronic lung disease (COPD, emphysema)				
Asthma or chronic bronchitis				
Heart disease or congestive heart failure				
Liver disease				
Other conditions (specify)				

15.) Health behaviors:

	Check one:		Quantity per day (packs or drinks)	Duration (years)
	YES	NO		
Are you currently a smoker?				
Are you a former smoker?				
Do you drink alcohol?				

16.) Do you know anyone else with similar symptoms? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Name	Phone	State of Residence	Details of Shared Exposure

Additional Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Thank you so much for taking the time to answer these questions. Do you have any questions that I can help answer? If you have any questions or remember any further details later, please contact the \_\_\_\_\_ (health department) at phone: \_\_\_\_\_.

**Olszewski, Rosemarie (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, April 06, 2015 9:00 AM  
**To:** Michael Glasgow  
**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** RE: City of Flint - March Bromate Results

Michael,

The March result is encouraging....we need a copy of the sample result from the sample collected in October of 2014...

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Monday, April 06, 2015 7:24 AM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** City of Flint - March Bromate Results

Adam,

Here are the results of our March bromate sampling.

Mike Glasgow  
City of Flint Water Plant

---

**Olszewski, Rosemarie (DEQ)**

---

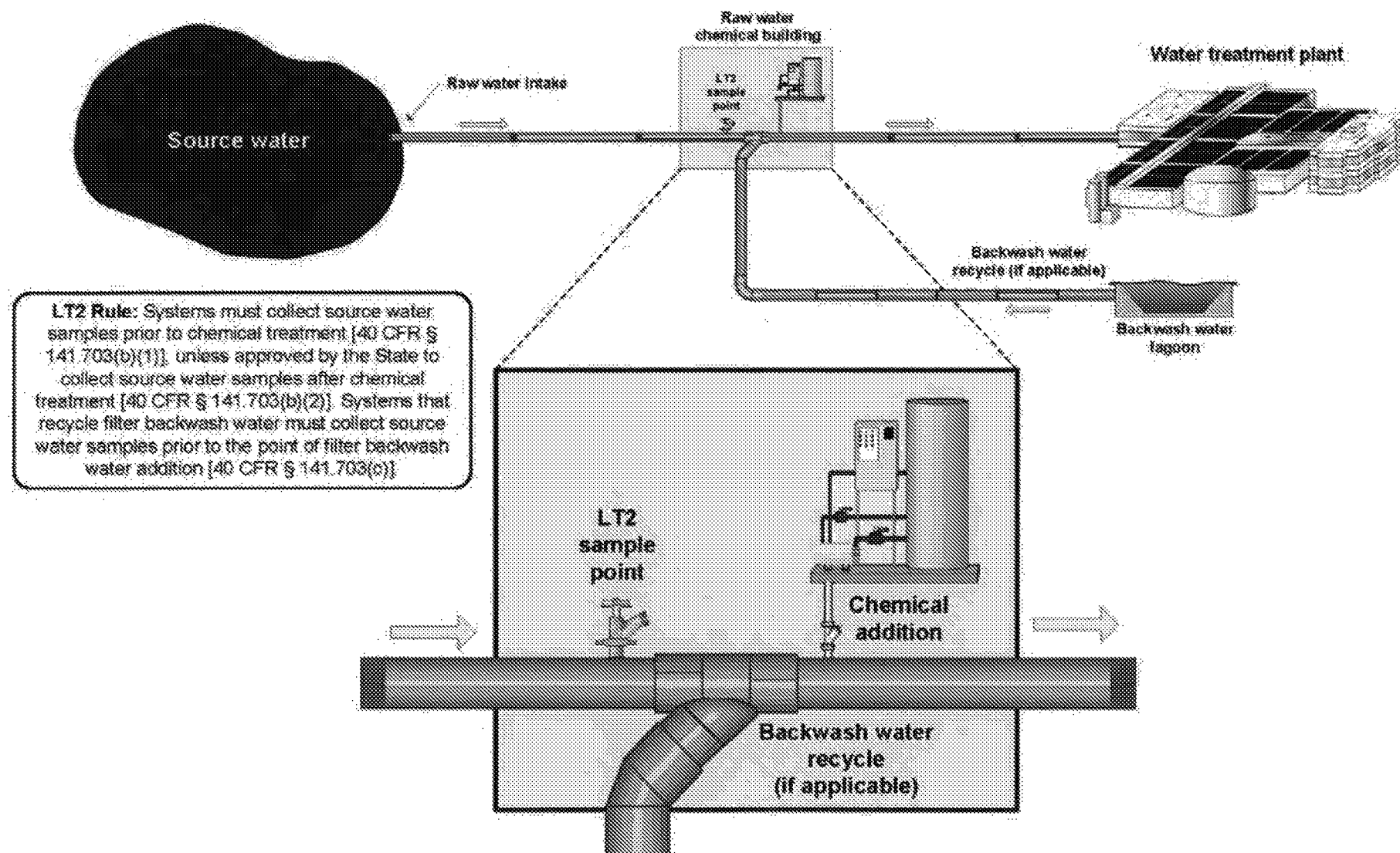
**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, April 03, 2015 2:47 PM  
**To:** 'bwright@cityofflint.com'; Michael Glasgow  
**Subject:** FW: Schematics for LT2 sampling plans  
**Attachments:** Schematics\_combined.pdf; SCHEMATIC\_01.pdf; SCHEMATIC\_02.pdf; SCHEMATIC\_03.pdf; SCHEMATIC\_04.pdf; SCHEMATIC\_05.pdf; SCHEMATIC\_06.pdf; SCHEMATIC\_07.pdf; SCHEMATIC\_08.pdf; SCHEMATIC\_09.pdf; SCHEMATIC\_10.pdf

Brent, Mike

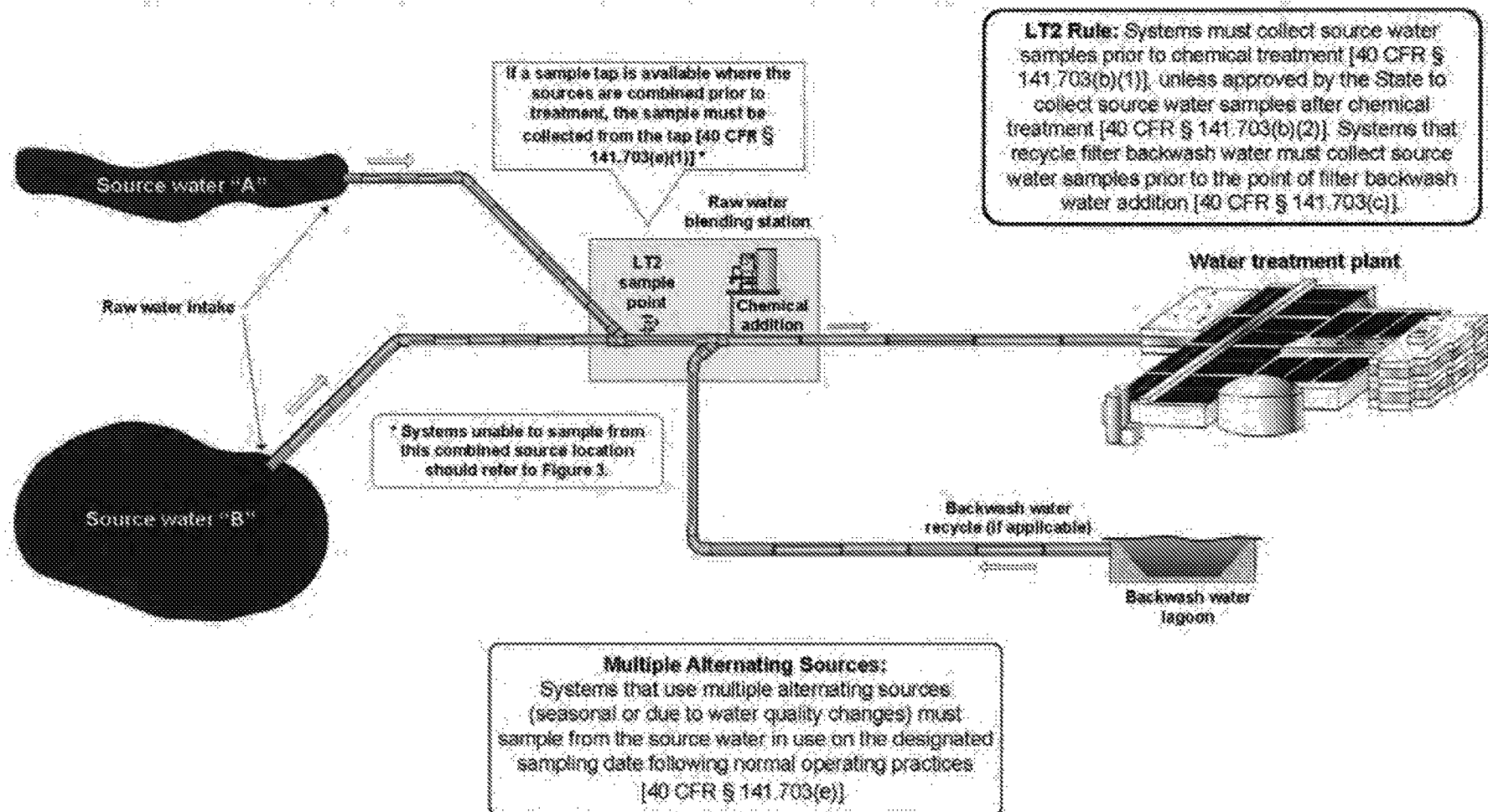
Attached are the example schematics that the plants on Schedule 2 may use to indicate where the source water sampling location is in relation to the intake, chemical feed points, recycle streams (if any) and the plant. You can select the schematic that best fits your situation and mark the sampling location and other pertinent information on it. If you can't find a schematic that doesn't fit Flint's exact setup, you can use the generic/blank one (schematic 10). Your Schedule 2 Crypto. monitoring letter is being mailed to you today.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

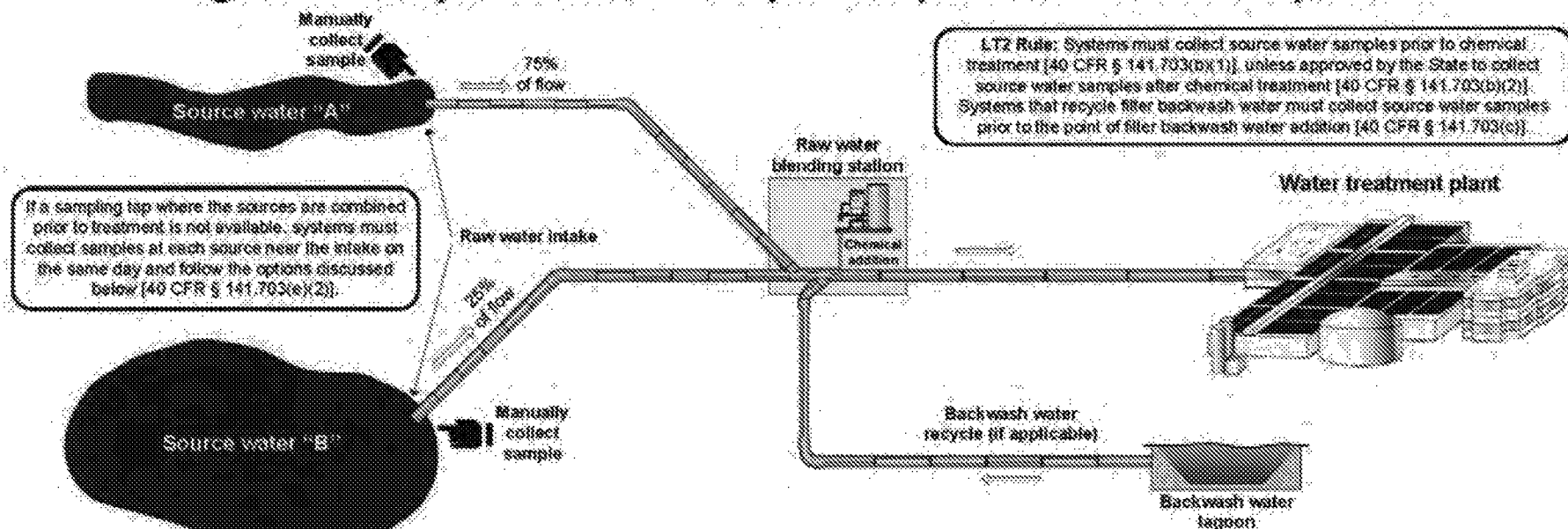
**Figure 1. Sample Tap before Chemical Treatment  
and Backwash Water Recycle (if applicable)**



**Figure 2. Multiple Sources: Sample Tap after Two Combined Sources**

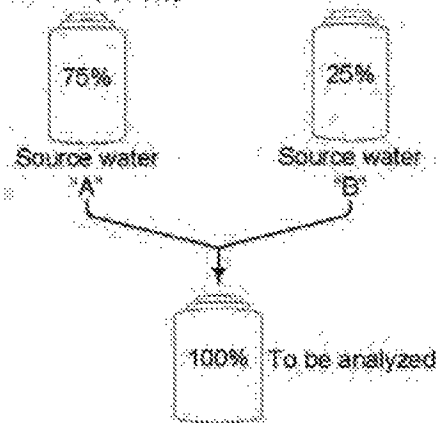


**Figure 3. Multiple Sources: Two (or More) Sources to be Composited**



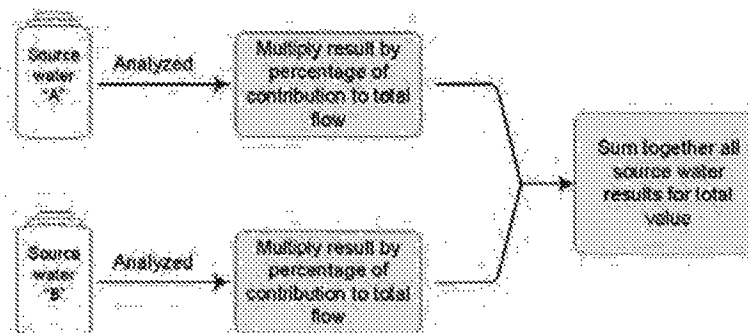
**OPTION 1 (Recommended Option):**

Collect samples manually at each source near the intake on the same day and composite them into one sample to be analyzed. The volume of sample from each source must reflect its proportion of the total plant flow at the time the samples were collected [40 CFR § 141.703(e)(2)(i)].



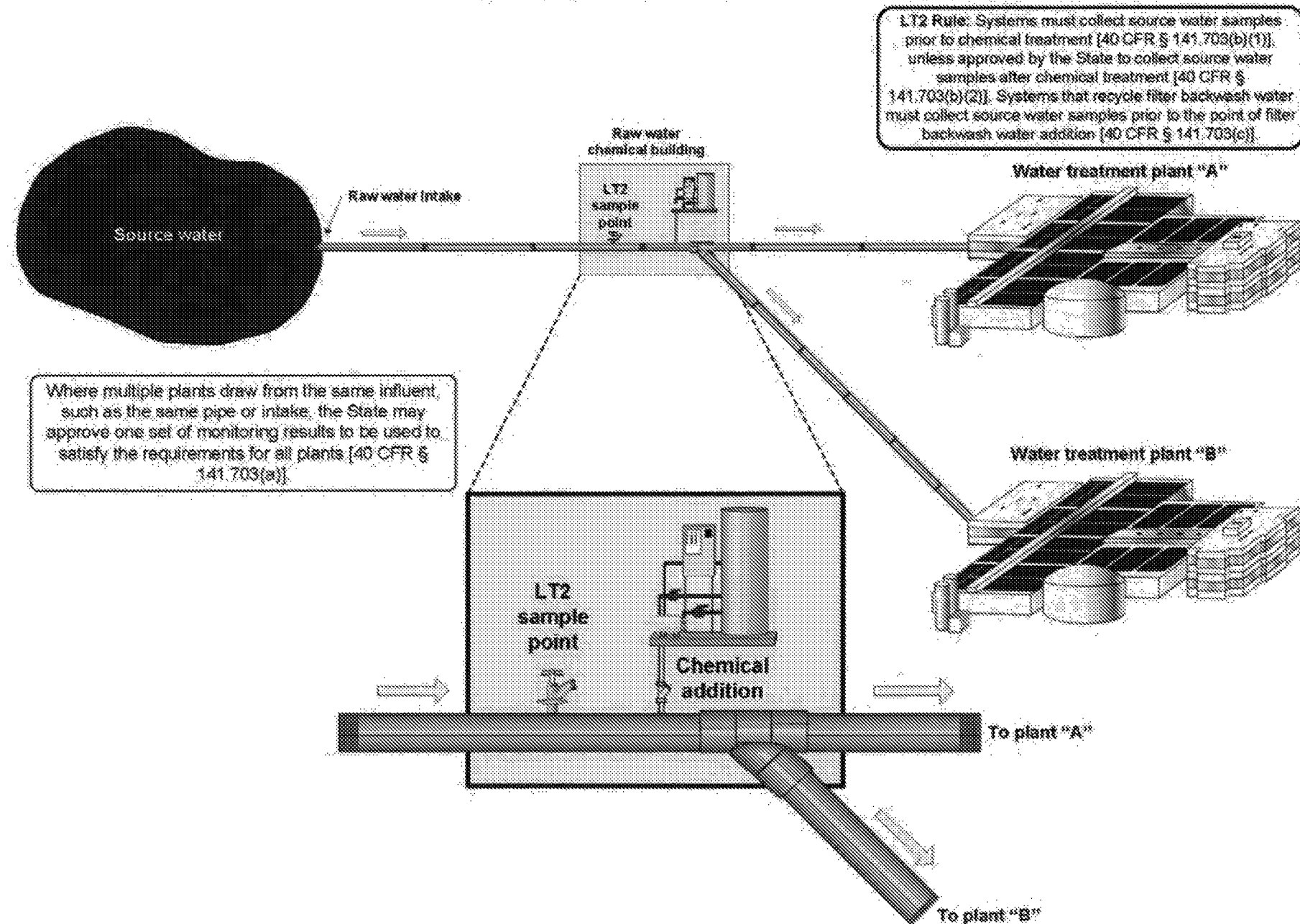
**OPTION 2:**

Collect samples manually at each source near the intake on the same day and analyze each independently, then calculate a weighted average of the analysis results. This is done by multiplying the result for each source by the percentage of its contribution to the total plant flow at the time the samples were collected, and then summing these values [40 CFR § 141.703(e)(2)(ii)].





**Figure 4. Multiple Plants with the Same Influent**

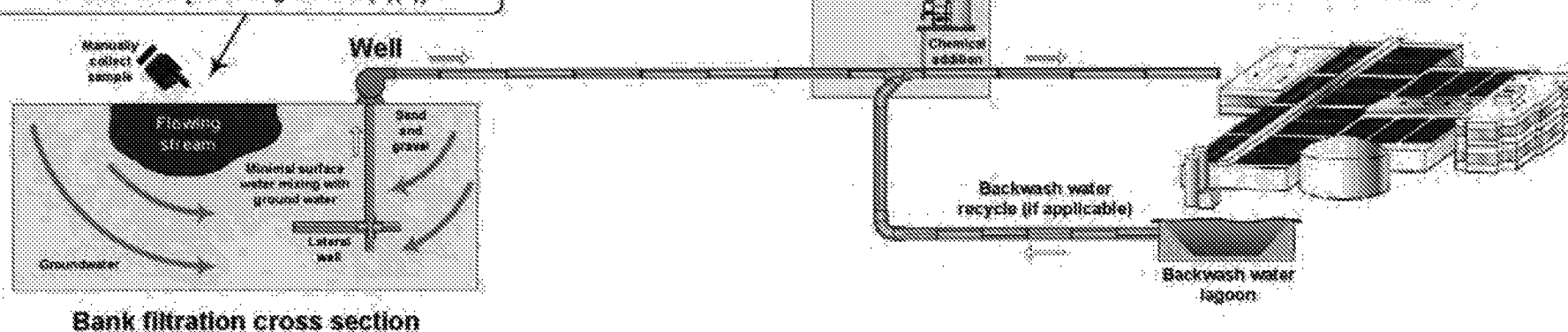




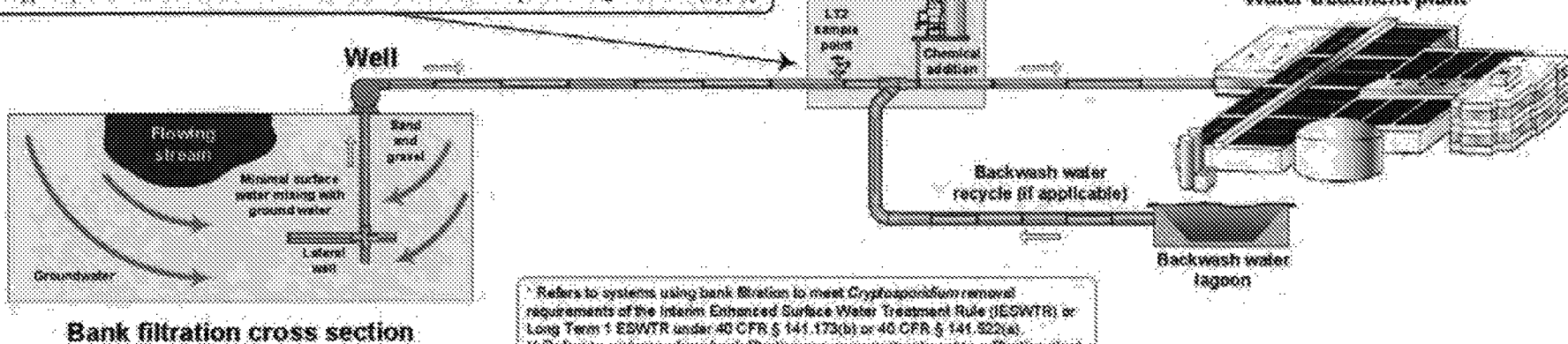
## Figure 5. Bank Filtration

The correct sampling location for systems using bank filtration differs depending on whether the bank filtered water is treated by subsequent filtration:

**Scenario 1:** Systems that receive *Cryptosporidium* treatment credit for bank filtration must collect source water samples in the surface water prior to bank filtration [40 CFR § 141.703(d)(1)] \*

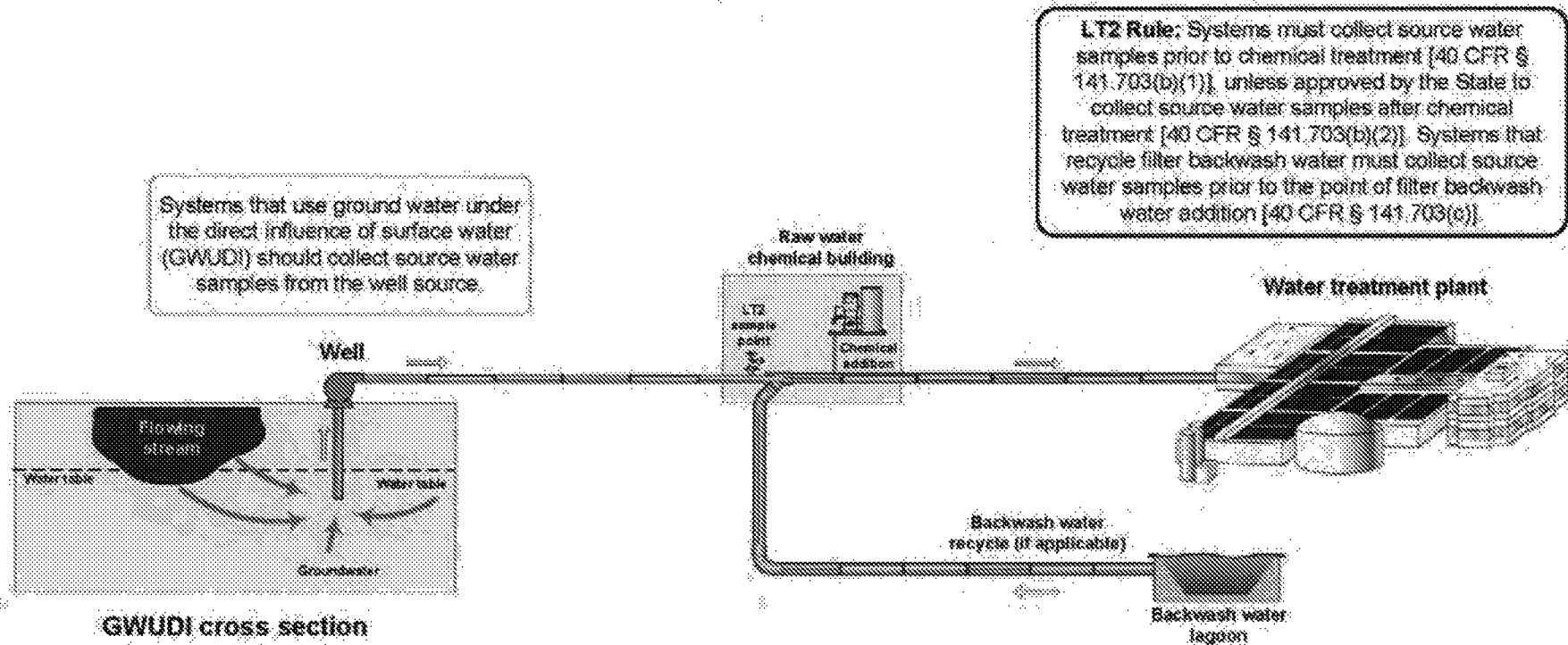


**Scenario 2:** Systems using bank filtered water that is treated by subsequent filtration must collect source water samples from the well source (i.e., after bank filtration) but before any other treatment. \*\* Use of bank filtration during monitoring should be consistent with routine operational practice. Systems collecting samples after a bank filtration process may not receive *Cryptosporidium* treatment credit for the bank filtration [40 CFR § 141.703(d)(2)]



\* Refers to systems using bank filtration to meet *Cryptosporidium* removal requirements of the Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 ESWTR under 40 CFR § 141.173(b) or 40 CFR § 141.522(a).  
 \*\* Refers to systems where bank filtration serves as pretreatment to a filtration plant.

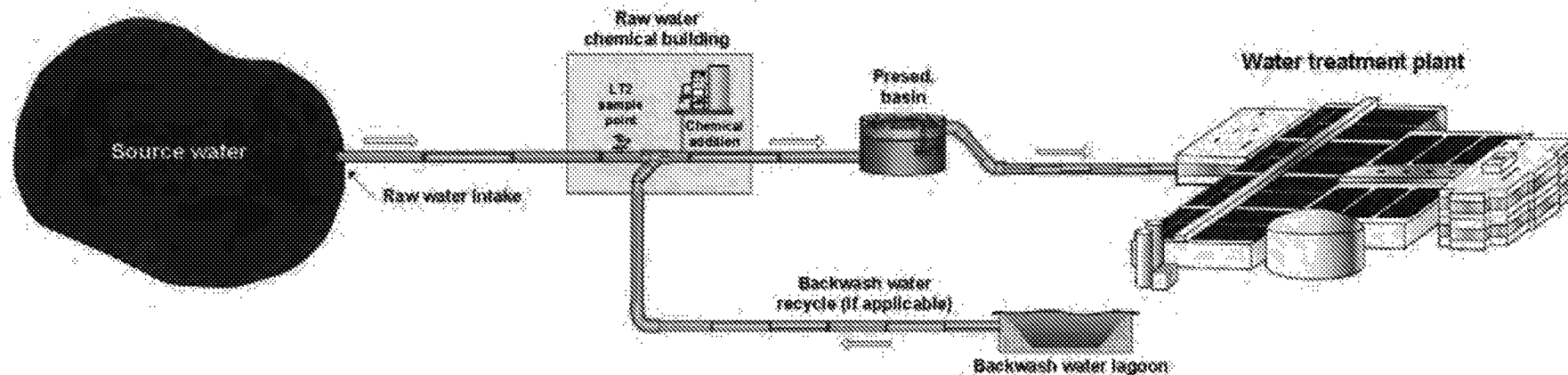
**Figure 6. Ground Water Under the Direct Influence of Surface Water (GWUDI)**



# Figure 7. Presedimentation Basin

## Scenario 1:

Systems using a presedimentation basin with chemical addition should collect source water samples prior to chemical treatment, unless approved by the State to collect source water samples after chemical treatment. Systems that recycle filter backwash water must collect source water samples prior to the point of filter backwash water addition [40 CFR § 141.703(c)].



## Scenario 2:

Systems without chemical addition prior to or in a presedimentation basin, or that have been approved by the State to collect source water samples after chemical treatment, may sample after the presedimentation basin but will not receive any treatment credit for presedimentation.

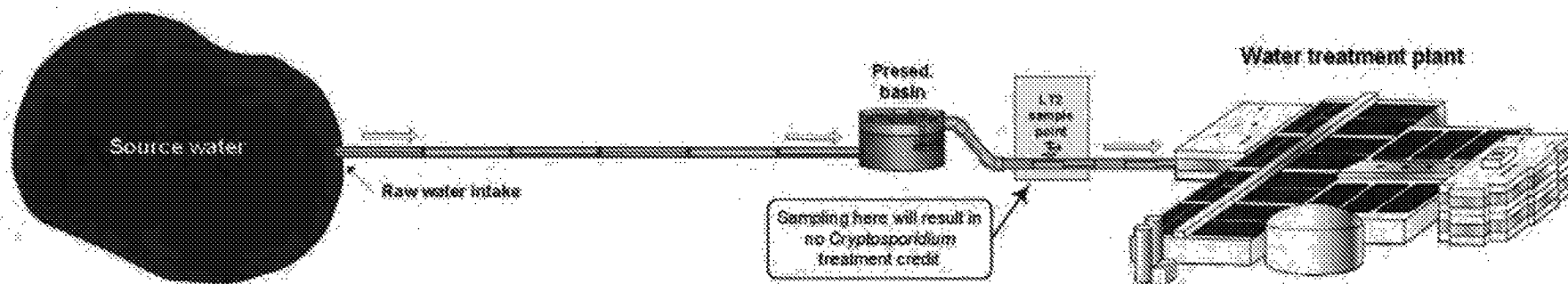
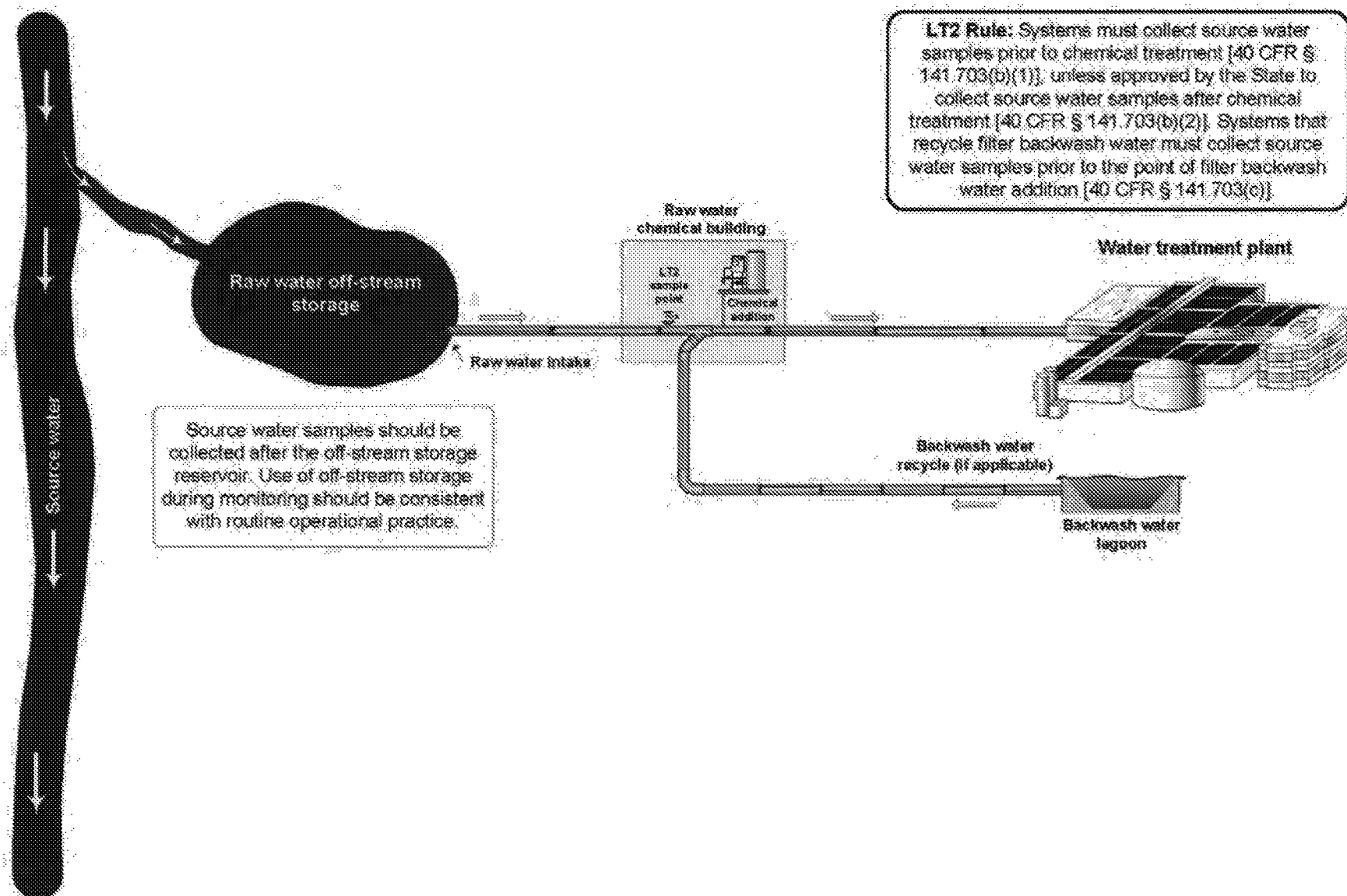
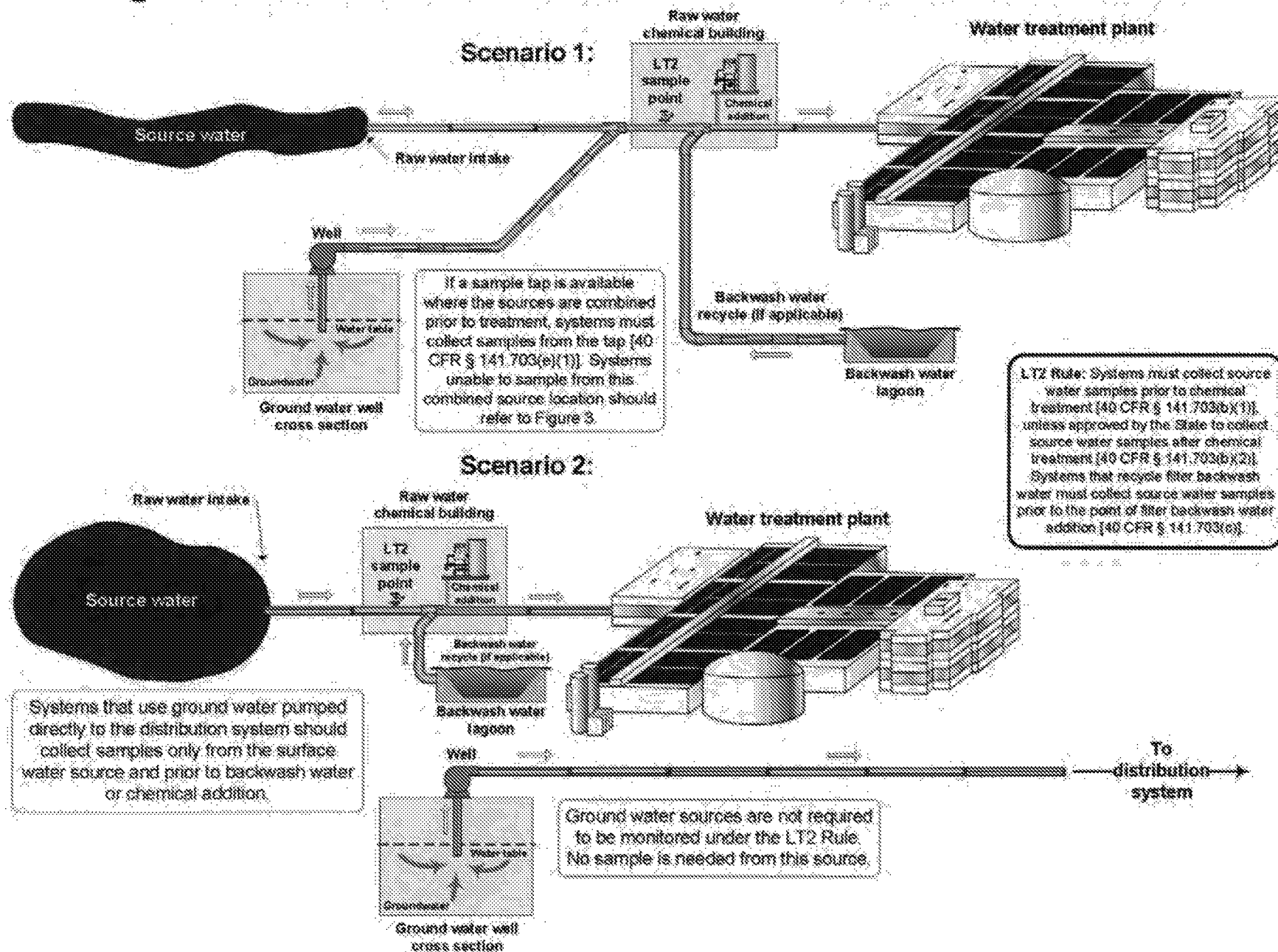


Figure 8. Raw Water Off-Stream Storage



**Figure 9. Mixed Source Water: Ground Water and Surface Water Sources**



**Figure 10. Blank Schematic for Submission to EPA**

Public Water System (PWS) name: \_\_\_\_\_

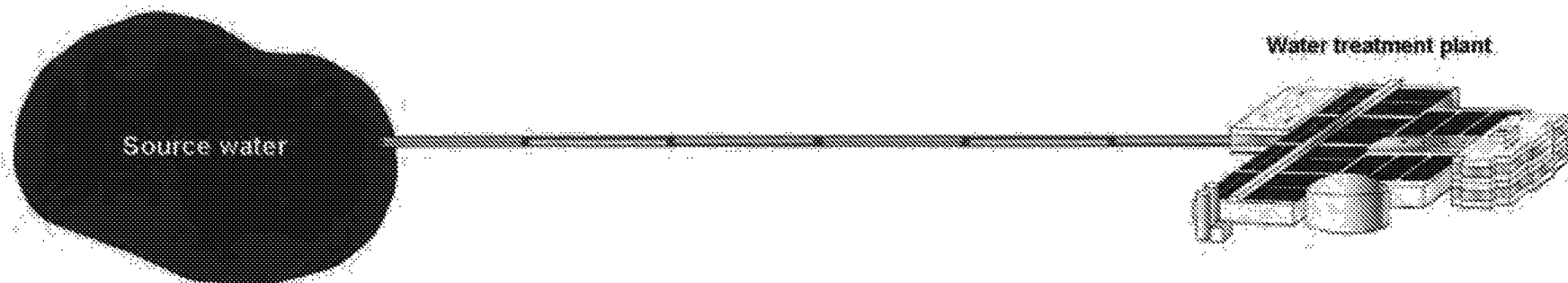
PWS ID: \_\_\_\_\_

Water treatment plant name: \_\_\_\_\_

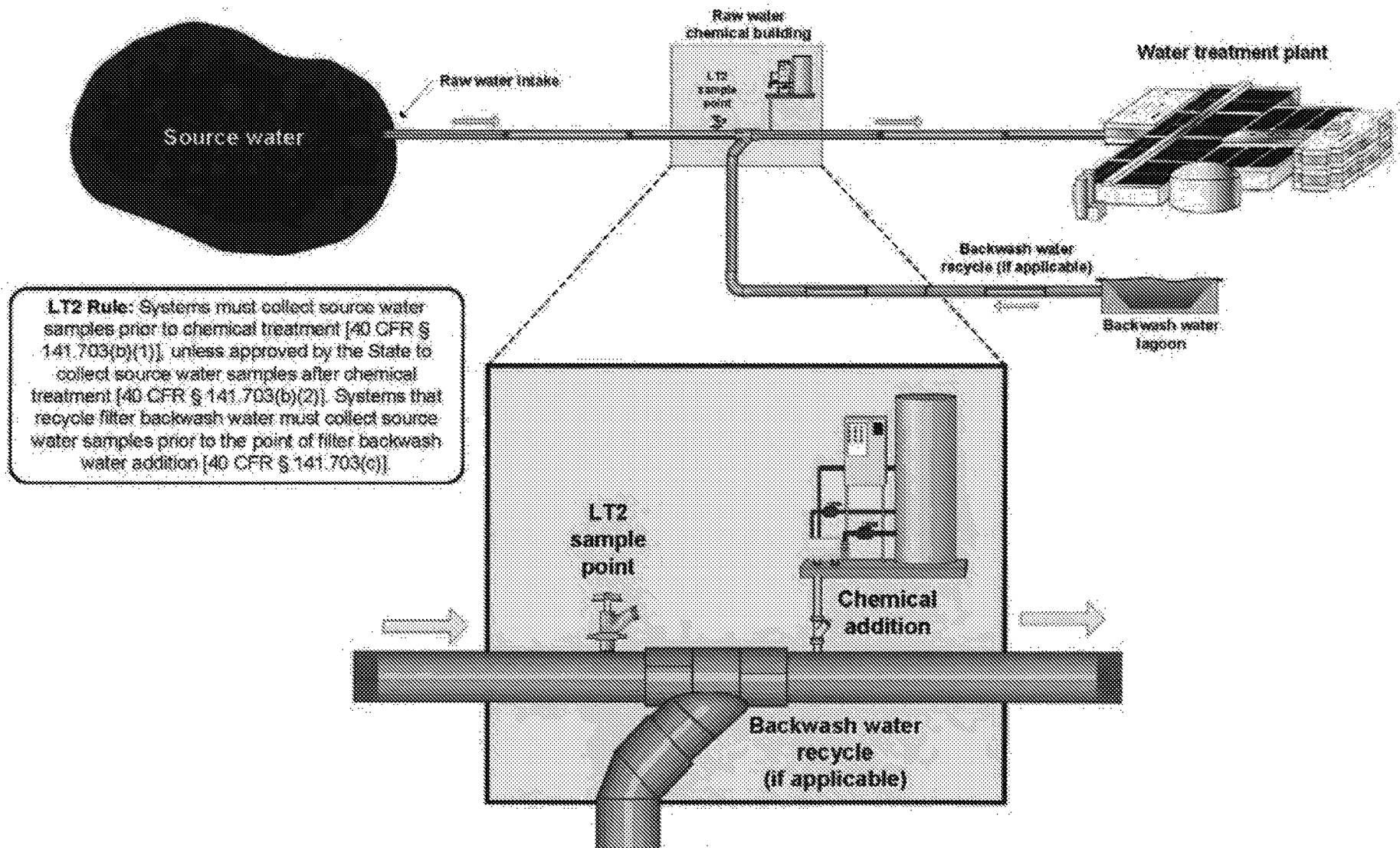
Water system facility ID: \_\_\_\_\_

Indicate the following on the diagram that best represents your facility type (if applicable):

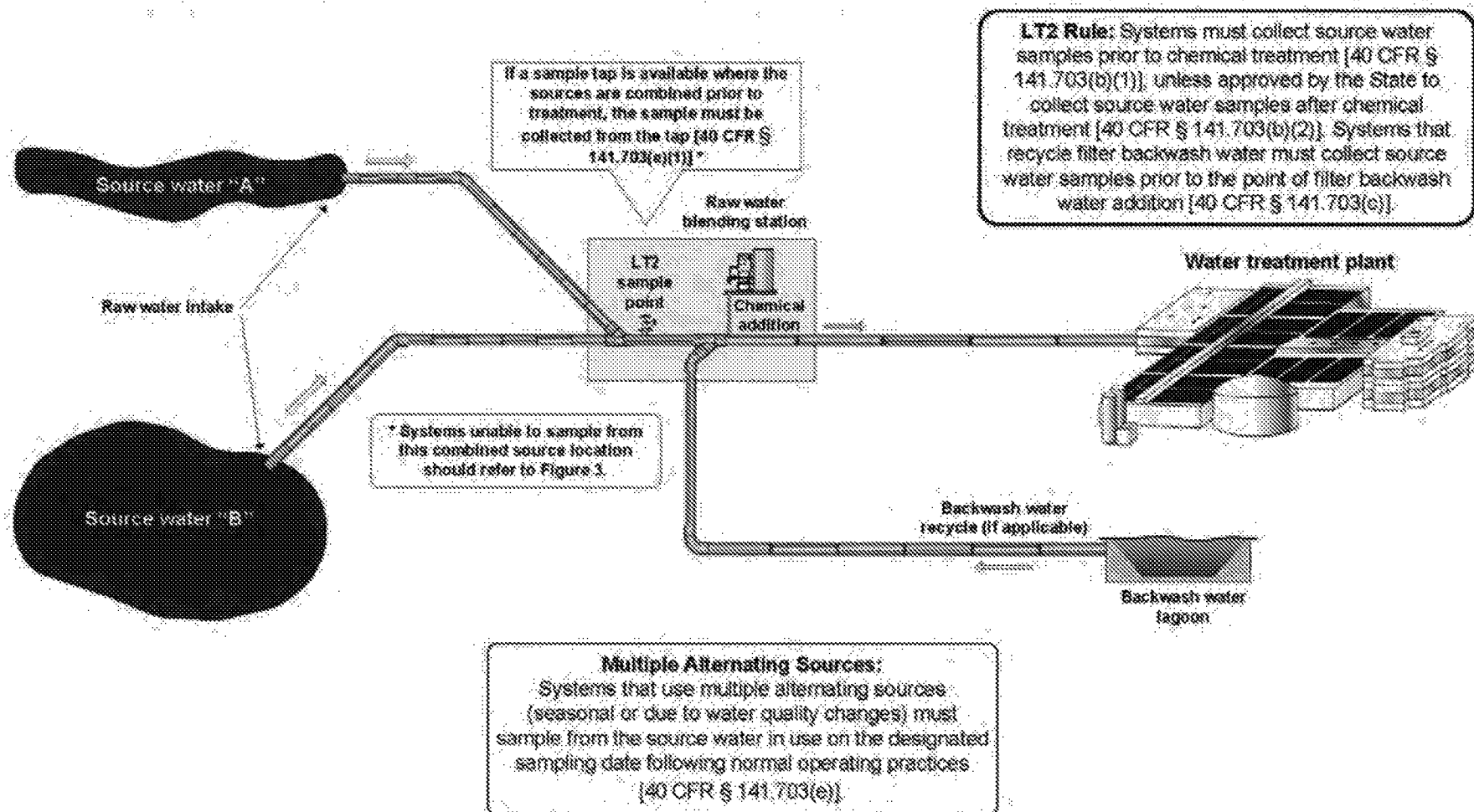
1. LT2 sampling location
2. Points of chemical treatment prior to the treatment plant
3. Filter backwash water addition
4. Pretreatment processes (e.g., presedimentation basins, bank filtration)
5. Multiple source waters (show by adding additional sources)



**Figure 1. Sample Tap before Chemical Treatment and Backwash Water Recycle (if applicable)**

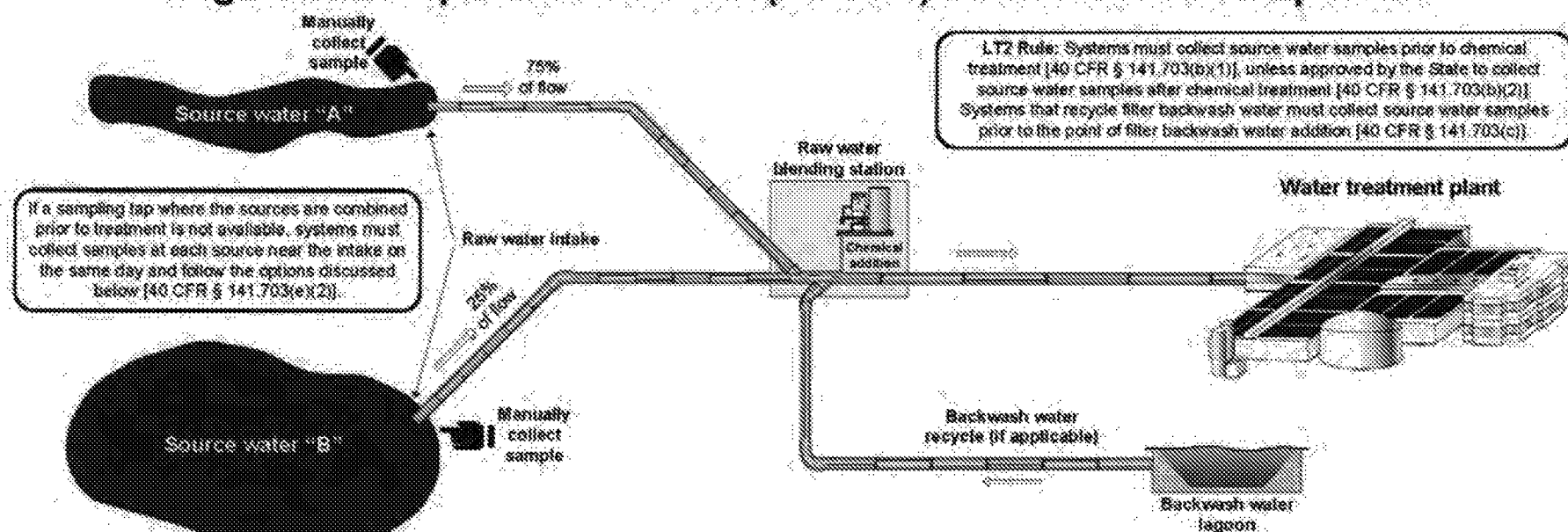


**Figure 2. Multiple Sources: Sample Tap after Two Combined Sources**



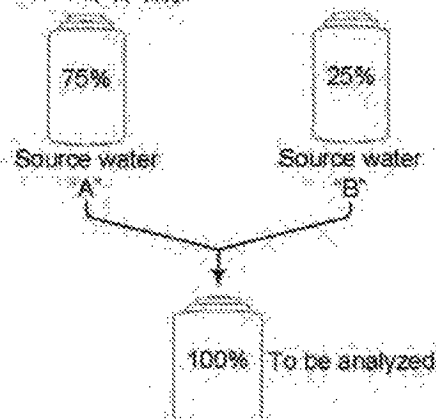


# Figure 3. Multiple Sources: Two (or More) Sources to be Composited



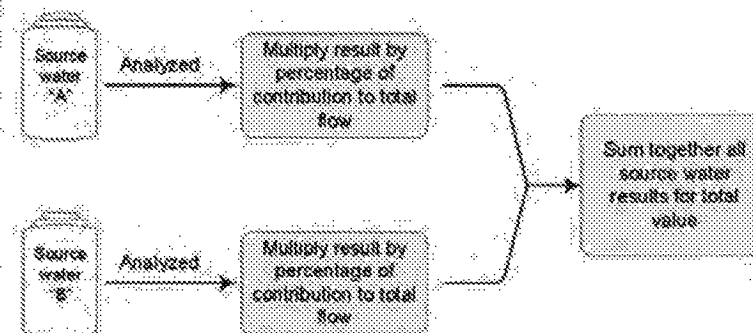
## OPTION 1 (Recommended Option):

Collect samples manually at each source near the intake on the same day and composite them into one sample to be analyzed. The volume of sample from each source must reflect its proportion of the total plant flow at the time the samples were collected [40 CFR § 141.703(e)(2)(i)].

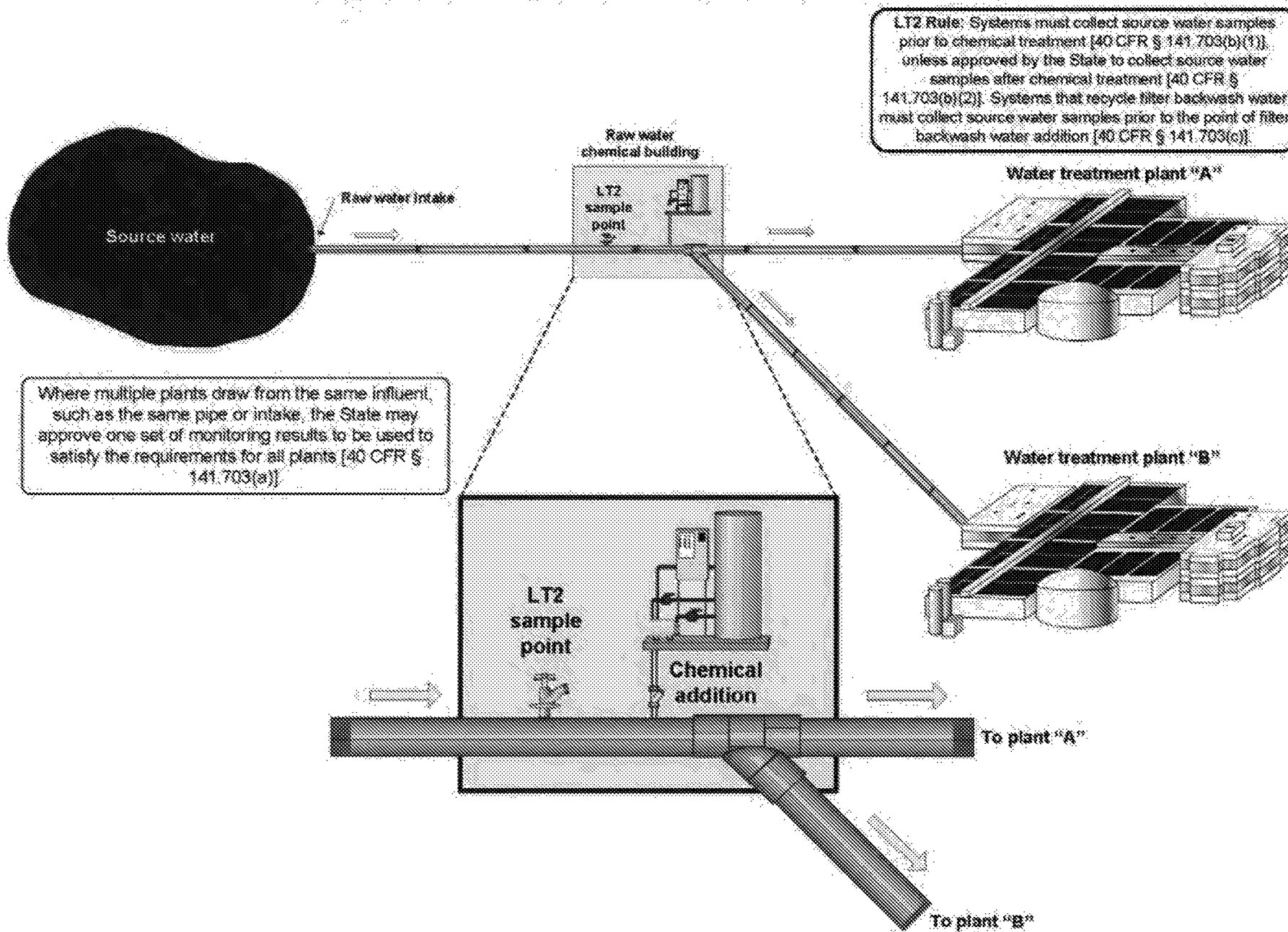


## OPTION 2:

Collect samples manually at each source near the intake on the same day and analyze each independently, then calculate a weighted average of the analysis results. This is done by multiplying the result for each source by the percentage of its contribution to the total plant flow at the time the samples were collected, and then summing these values [40 CFR § 141.703(e)(2)(ii)].



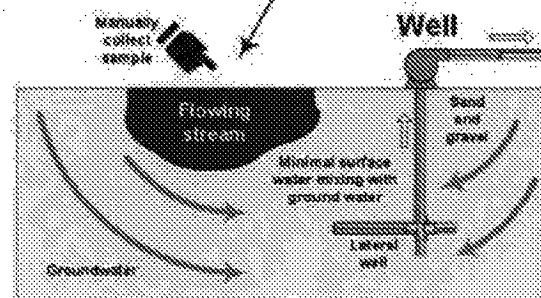
**Figure 4. Multiple Plants with the Same Influent**



## Figure 5. Bank Filtration

The correct sampling location for systems using bank filtration differs depending on whether the bank filtered water is treated by subsequent filtration.

**Scenario 1:** Systems that receive *Cryptosporidium* treatment credit for bank filtration must collect source water samples in the surface water prior to bank filtration [40 CFR § 141.703(d)(1)].\*



Bank filtration cross section

Raw water  
chemical building

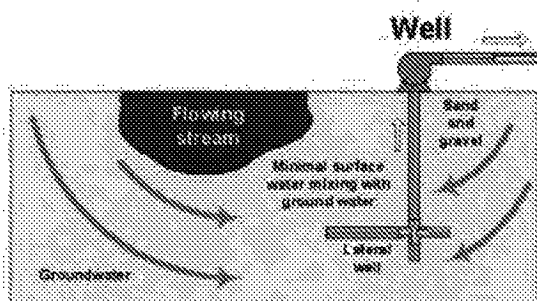


Water treatment plant

Backwash water  
recycle (if applicable)

Backwash water  
lagoon

**Scenario 2:** Systems using bank filtered water that is treated by subsequent filtration must collect source water samples from the well source (i.e., after bank filtration) but before any other treatment.\*\* Use of bank filtration during monitoring should be consistent with routine operational practice. Systems collecting samples after a bank filtration process may not receive *Cryptosporidium* treatment credit for the bank filtration [40 CFR § 141.703(d)(2)].



Bank filtration cross section

Raw water  
chemical building



Water treatment plant

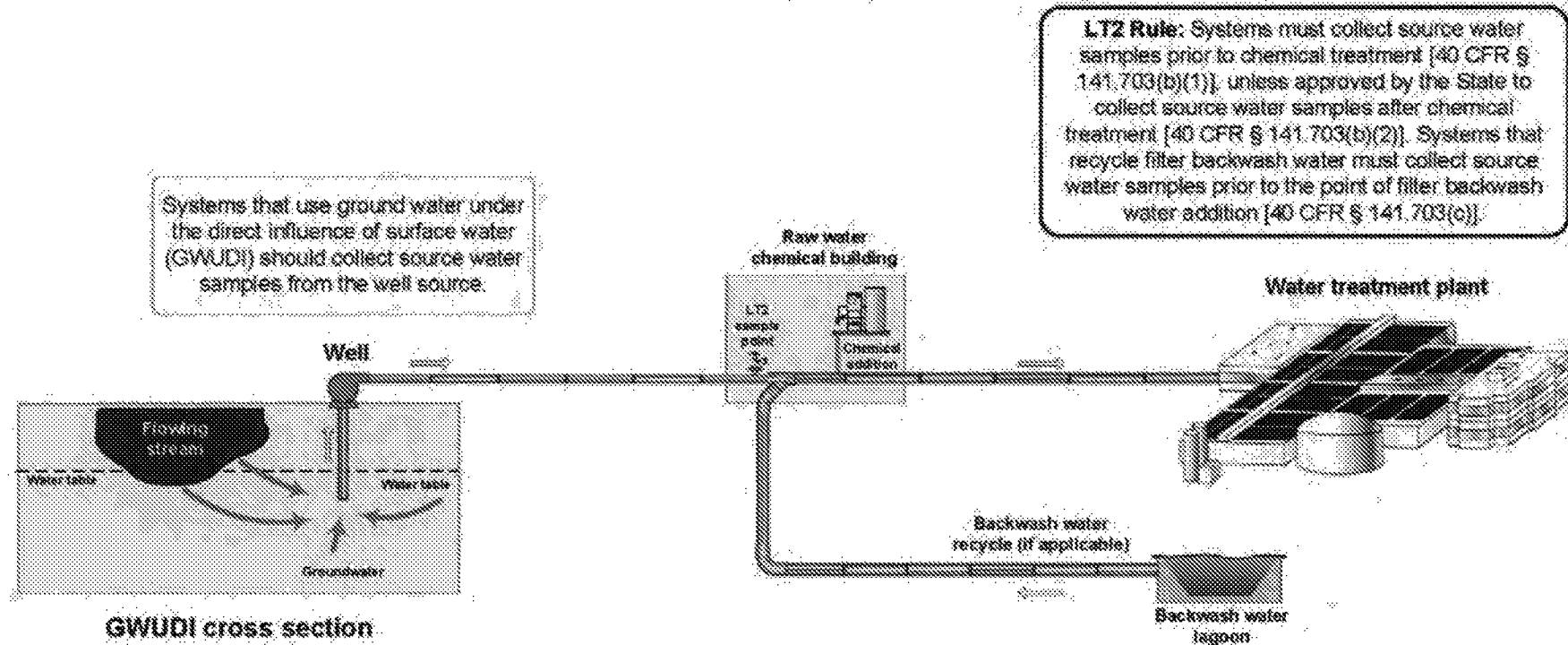
Backwash water  
recycle (if applicable)

Backwash water  
lagoon

\* Refers to systems using bank filtration to meet *Cryptosporidium* removal requirements of the Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 ESWTR under 40 CFR § 141.173(b) or 40 CFR § 141.522(a).

\*\* Refers to systems where bank filtration serves as pretreatment to a filtration plant.

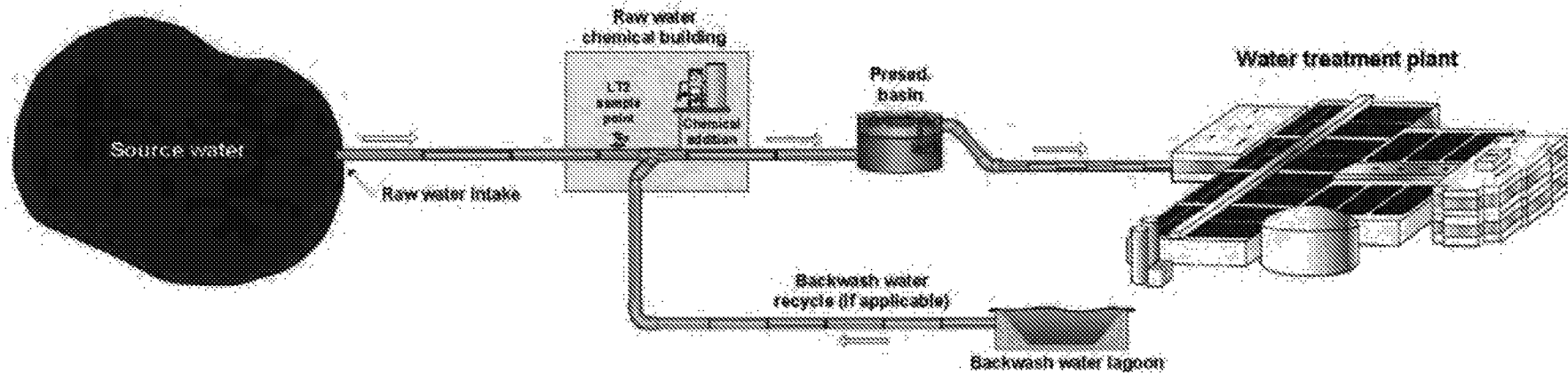
**Figure 6. Ground Water Under the Direct Influence of Surface Water (GWUDI)**



# Figure 7. Presedimentation Basin

## Scenario 1:

Systems using a presedimentation basin with chemical addition should collect source water samples prior to chemical treatment, unless approved by the State to collect source water samples after chemical treatment. Systems that recycle filter backwash water must collect source water samples prior to the point of filter backwash water addition [40 CFR § 141.703(c)].



## Scenario 2:

Systems without chemical addition prior to or in a presedimentation basin, or that have been approved by the State to collect source water samples after chemical treatment, may sample after the presedimentation basin but will not receive any treatment credit for presedimentation.

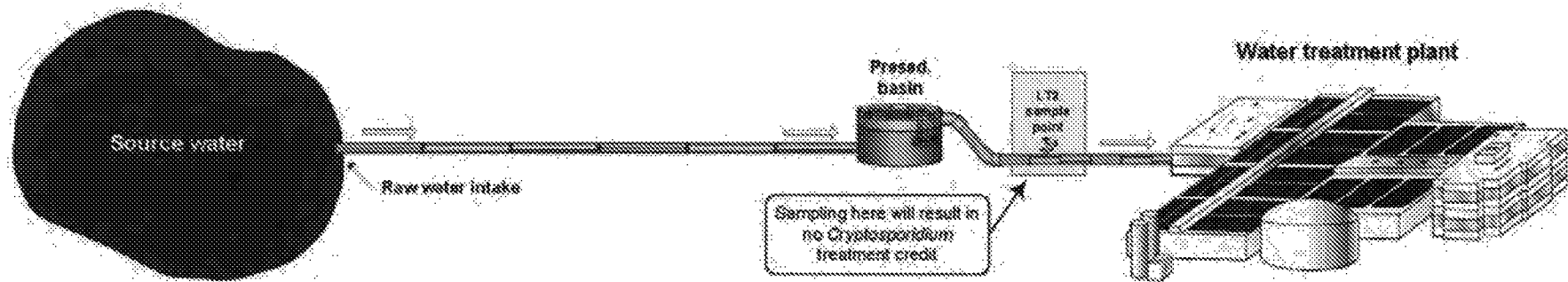
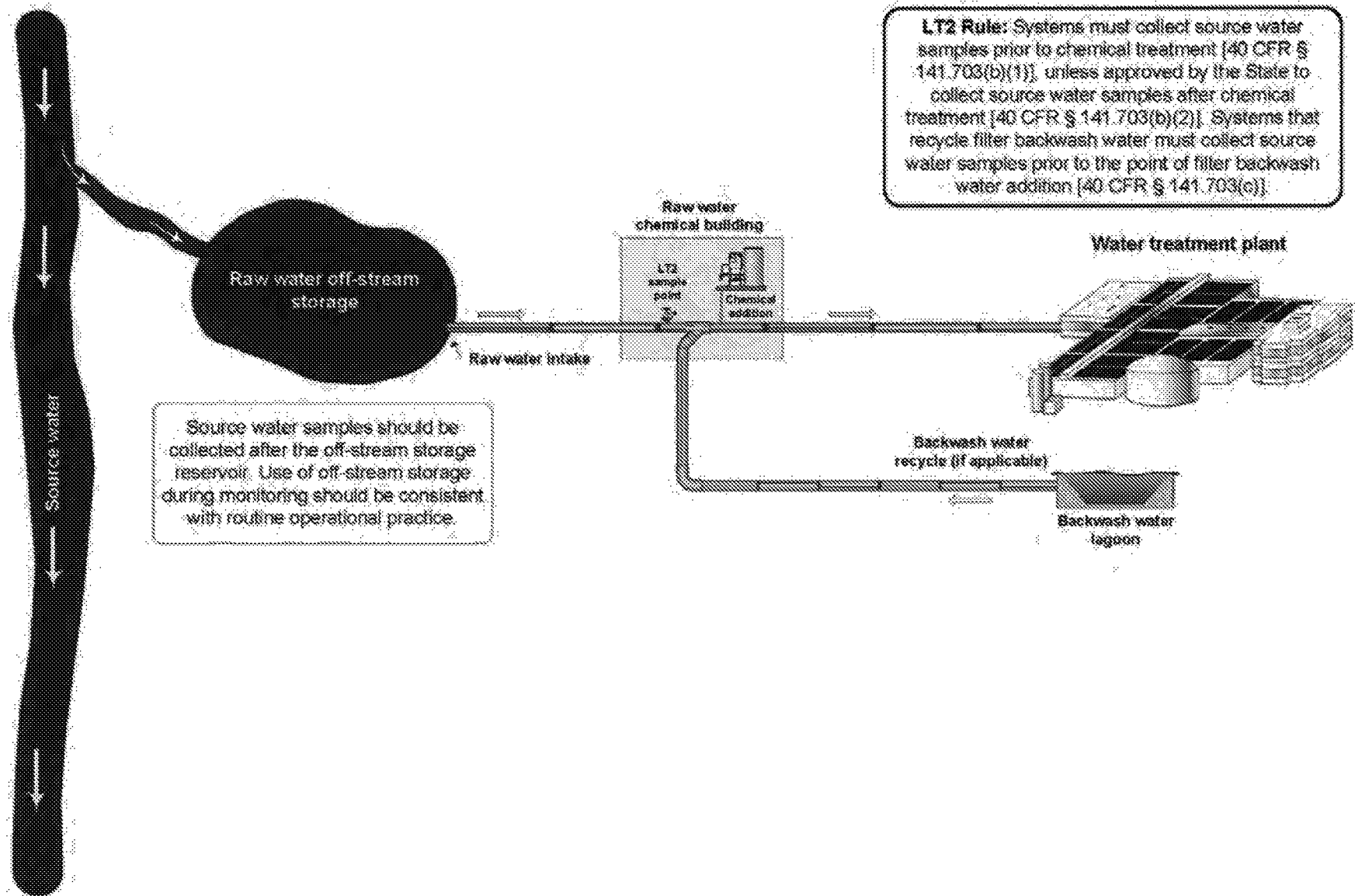
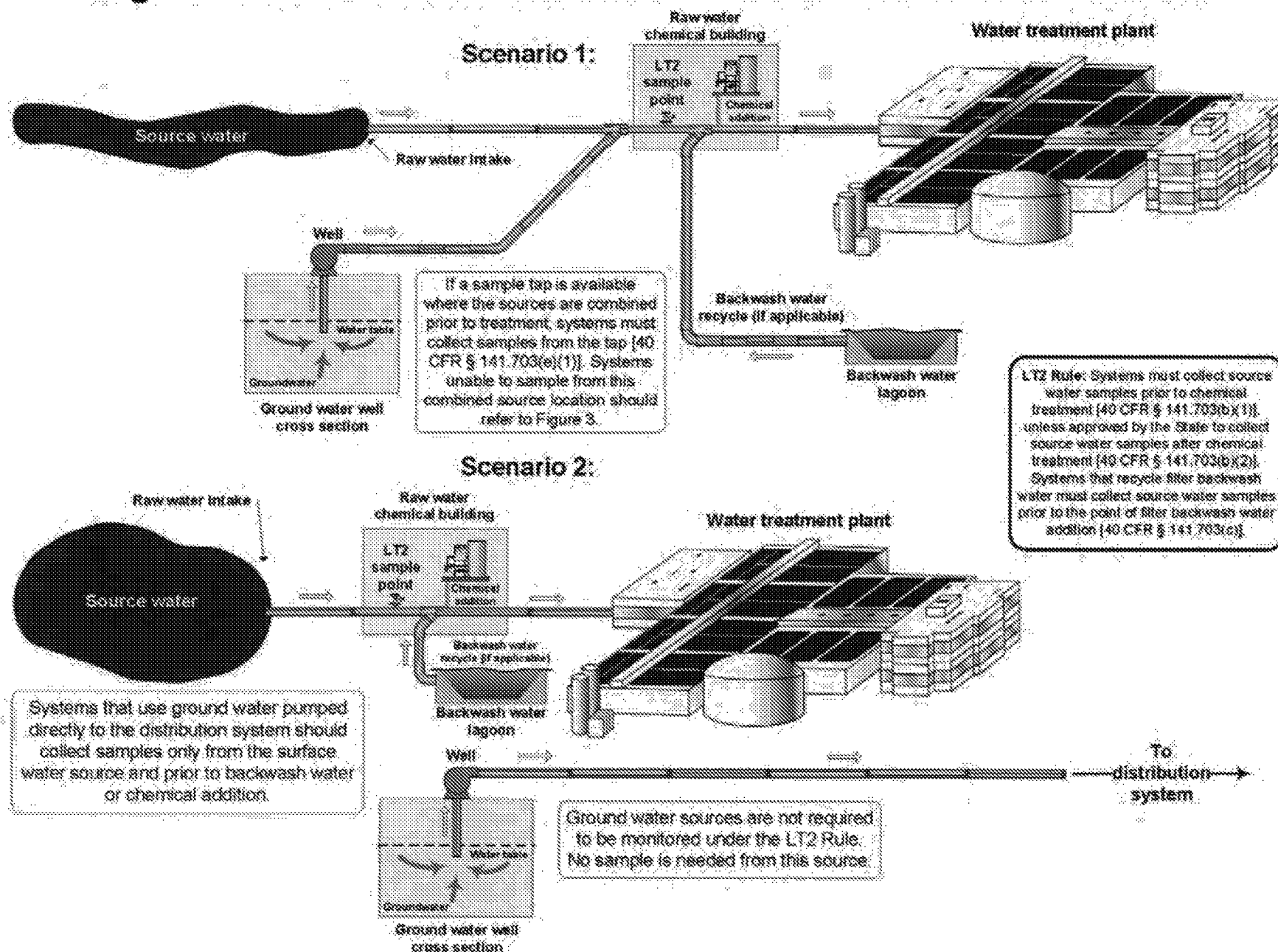


Figure 8. Raw Water Off-Stream Storage



**Figure 9. Mixed Source Water: Ground Water and Surface Water Sources**



**Figure 10. Blank Schematic for Submission to EPA**

Public Water System (PWS) name: \_\_\_\_\_

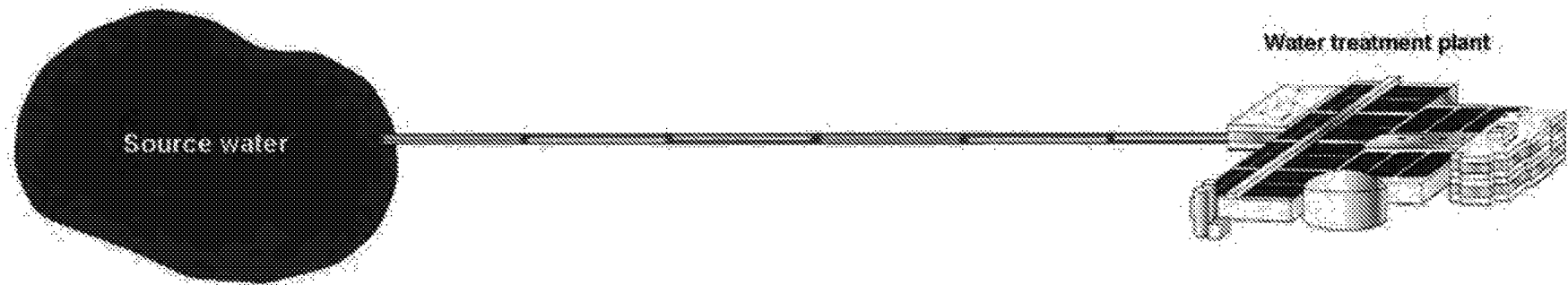
PWS ID: \_\_\_\_\_

Water treatment plant name: \_\_\_\_\_

Water system facility ID: \_\_\_\_\_

Indicate the following on the diagram that best represents your facility type (if applicable):

1. LT2 sampling location
2. Points of chemical treatment prior to the treatment plant
3. Filter backwash water addition
4. Pretreatment processes (e.g., presedimentation basins, bank filtration)
5. Multiple source waters (show by adding additional sources)






**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 10:35 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Communications between City of Flint and DEQ  
**Attachments:** Flint-2015-02-13-AnnualMonSched.pdf; Flint-2015-03-05-TTHM-VN-15-1.pdf; Flint-2015-03-30-PbCu90.pdf; Flint-2015-04-03-LT2ESWTR.pdf; Flint-2015-04-03-Permit151018.pdf; Flint-2015-05-06-CCR-reminder.pdf; Flint-2015-05-11-CCCP.pdf; S2 Grant Project No 9204.01 City of Flint.pdf; RE: Premise plumbing; Water Quality Optimization Strategy; call; Flint MORs; Flint River Source Water Assessment; FW: PEAS call; FW: Schematics for LT2 sampling plans; FW: Water Supply Sources; Premise plumbing; RE: City of Flint - March Bromate Results; RE: City of Flint March 2015 MOR; RE: City Water Tech Team; RE: HC Letter & FAQ's; RE: May Technical Advisory Meeting; RE: PEAS call; RE: RE: Flint Water Age map; RE: TTHM Draft Letter; RE: Water Supply Sources; Residential customers; Watermain breaks; distribution WQPs; January '15 MOR; Lead Copper Cert form; RE: City of Flint Water Plant Monitoring Results; RE: distribution WQPs; RE: distribution WQPs; RE: January '15 MOR

**From:** Busch, Stephen (DEQ)   
**Sent:** Thursday, May 28, 2015 12:15 PM  
**To:** Howes, Sarah (DEQ)  
**Cc:** Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Potter, Jodi (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ); Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Potter, Jodi (DEQ); Pallone, Maggie (DEQ)  
**Subject:** RE: Communications between City of Flint and DEQ

Sarah,

Per the request from Representative Neely, attached are communications from the DEQ Office of Drinking Water and Municipal Assistance (ODWMA) to the City of Flint dating back to February 2015.

This includes:

- 1 construction permit
- 7 letters
- 7 emails from Adam Rosenthal, Environmental Quality Analyst
- 18 emails from Mike Prysby, District Engineer
- 2 emails from Steve Busch, District Supervisor

Please let us know if we can provide any further assistance in addressing Representative Neely's request or if they have any questions or issues we could help answer.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, May 26, 2015 1:59 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)

**Cc:** Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Howes, Sarah (DEQ); Shaler, Karen (DEQ); Potter, Jodi (DEQ)

**Subject:** FW: Communications between City of Flint and DEQ

**Importance:** High

Note the deadline of COB Thursday to Sarah.

---

**From:** Pallone, Maggie (DEQ)

**Sent:** Tuesday, May 26, 2015 1:21 PM

**To:** Shekter Smith, Liane (DEQ)

**Cc:** Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Howes, Sarah (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); DEQ-Legislative-Contact; Potter, Jodi (DEQ)

**Subject:** Communications between City of Flint and DEQ

Liane,

Rep Neely has requested any communications that DEQ has had with City of Flint between February 2015 and today. Could you please pull that information together and get it to Sarah by COB on Thursday? She will then forward it the Representative's office.

Please let me know if you need any additional details.

Thanks,

Maggie

**Maggie Pallone**

Director of Legislative Affairs

Department of Environmental Quality

**PPI** (cell)

[PalloneM@michigan.gov](mailto:PalloneM@michigan.gov)



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

February 13, 2015

Mr. Brent Wright  
City Of Flint - D P W  
Flint Water Plant  
4500 North Dort Highway  
Flint, MI 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Drinking Water Monitoring Schedule – 2015  
Annual Reports

Enclosed is your Drinking Water Monitoring Schedule for calendar year 2015 outlining the minimum requirements for your public water supply. Collect samples early in the monitoring period of the year indicated on the schedule. If you use a private laboratory you are required to report the results to us within the first ten days of the month following the month that you received the results. To receive credit for monitoring, the "WSSN" (water supply serial number), the "Site Code," and "County" must appear on the sample result. Bottles will NOT be mailed automatically. If you use the DEQ Laboratory, you can order bottles by calling 517-335-8184. Be certain of the EPA sampling and analysis method requirements for hold times.

The Michigan Safe Drinking Water Act requires certain reports to be submitted to this office each year. Please remember that cross connection reports and annual pumpage reports are due by March 31, and the Consumer Confidence Report is due by July 1.

Also enclosed is the document "2015 Monitoring and Reporting Requirements." This provides additional details about monitoring and reporting requirements. If you have any questions, please contact us by telephone or email using the information below.

Michael F. Prysby, P.E., District Engineer  
Lansing District Office  
Office of Drinking Water and  
Municipal Assistance  
517-290-8817

Adam Rosenthal, EQA  
Lansing District Office  
Office of Drinking Water and  
Municipal Assistance  
517-284-6644

MFP:AR:JR

Enclosure  
cc/encl: Mr. Mike Glasgow, City Of Flint

## 2015 Monitoring Schedule

FLINT, CITY OF

WSSN: 02310

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the WSSN, Site Code, and County on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

### Location: Plant Tap

Collect these samples at the entry point to the distribution system (after treatment, if applicable.)

Sample Type	# Samples/ Frequency	Collect Before	Site Code	Fee	Unit Number	Test Code
Automated Partial Chemistry	This DEQ lab scan includes nitrate, nitrite, fluoride, and sodium whose monitoring frequency requirements differ from one another. Before requesting analyses from a laboratory other than the DEQ laboratory, check with your DEQ district staff for the specific monitoring requirements.					
	1/3 months	Quarterly	TP001	\$18.00	32	R
Volatile Organic Compounds	1/3 months	Quarterly	TP001	\$100.00	36VO	CXVO
Complete Metals	1/36 months	09/30/2017	TP001	\$102.00	36ME	CMET2
Arsenic	1/3 months	Quarterly	TP001	\$18.00	36ME	CAS
Cyanide	1/3 months	Quarterly	TP001	\$25.00	36CNa	CCN
SOC – Pesticides	1/3 months	Quarterly	TP001	\$125.00	36PT	CXPT
SOC – Herbicides	1/3 months	Quarterly	TP001	\$120.00	36HB	CXHB
SOC – Carbamates	1/3 months	Quarterly	TP001	\$120.00	36LP	CXLP
Bromate	1/1 months	Monthly	TP001	Not performed at the DEQ Laboratory. A list of certified labs is at <a href="http://www.michigan.gov/DEQ">www.michigan.gov/DEQ</a> . Select Water, Drinking Water, Community Water Supply, then Certified Labs under Programs and Activities.		
Gross Alpha (Radiological)	1/3 months	Quarterly	TP001			
Radium 226 & Radium 228	1/3 months	Quarterly	TP001			
Water Quality Parameters	25/3 months	Quarterly	TP001	Various	Various	Various
Total Organic Carbon (TOC)	Pair/Monthly	Monthly	TP001	\$35.00	36TO	CTOC
	Monitor for TOC in the source water before any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as "paired samples." Collect the treated water sample not later than the point of combined filter effluent turbidity monitoring and representative of treated water.					
Expanded SOC's						
Dalapon & Haloacetic Acids	1/12 months	Between 04/01 and 09/30/2015	TP001	\$130.00	36HA	CXHA
Diquate	1/12 months	Between 04/01 and 09/30/2015	TP001	\$150.00	36DQ	CXDQ
Endothall	1/12 months	Between 04/01 and 09/30/2015	TP001	\$150.00	36EN	CXEN
EDB & DBCP	1/12 months	Between 04/01 and 09/30/2015	TP001	\$70.00	36VO	CXEV

## 2015 Monitoring Schedule

FLINT, CITY OF

WSSN: 02310

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the WSSN, Site Code, and County on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

### Location: Distribution System

Sample Type	Collect Samples According to the ...	# Samples/Frequency	Collect	Site Code	Fee	Unit Number	Test Code
Bacteriological -- coliforms	TCR Sampling Site Plan	100/Monthly	Monthly	DIST	\$16.00	30	BPTC
Chlorine Residual	DBP Monitoring Plan	If serving chlorinated water, measure the residual disinfectant level at the same point and at the same time as the bacteriological sample and report the average to the DEQ.					
Total Trihalomethanes	DBP Monitoring Plan	8/3 months	During February, May, August and November 2015	See DBP Monitoring Plan	\$65.00	36VO	CXTM
Haloacetic Acids		8/3 months	During February, May, August and November 2015	See DBP Monitoring Plan	\$130.00	36HA	CXHA
Water Quality Parameters	Representative Sites	25/Quarterly	Quarterly	DIST	Various	Various	Various
Lead Copper for Corrosion Control	Lead and Copper Sampling Pool	100/6 months	Between 1/1 and 6/30/2015	DIST	\$26.00	36CC	CCUB

## Community Water Supply 2015 Monitoring and Reporting Requirements

**Please Monitor Early:** Collect samples early in the monitoring period (month, quarter, year) of the year indicated on the schedule. Bacteriological and partial chemistry samples should be collected close to the shipping time and sent overnight delivery to assure sample holding times are not exceeded (30 and 48 hour hold times respectively). We also recommend avoiding mailing bacteriological samples immediately preceding or following a holiday because samples tend to exceed the 30 hour hold time. When this occurs, a repeat sample must be collected as soon as possible upon notification.

If you use a private laboratory please report the results to us within the first ten days of the month following the month that you received the results. A list of certified laboratories is available on request. If samples are not collected as indicated on your monitoring schedule, you will incur a monitoring violation and possibly a fine. For information on the fines policy, visit <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, and Administrative Fines (under Laws and Rules).

To receive credit for monitoring, you must include the "WSSN" (water supply serial number), the "Site Code," and the "County" when you submit samples for analysis. Site codes are listed on your monitoring schedule.

**Special Instructions If You Use The DEQ Laboratory:** Bottles will NOT be mailed automatically. To order bottles, call the DEQ Laboratory at 517-335-8184 or download the form EQP 2301 *Requisition for Water Sample Units* from [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on Key Topics, Laboratory Services, Drinking Water, Obtaining The Necessary Sampling Units, and 'test list'. Please note that the DEQ laboratory is closed on most state holidays. The DEQ laboratory prices are subject to change without notice.

**Special Instructions For Automated Partial Chemistry, VOC and TTHM Samples:** These sample bottles must be cooled and preserved during shipment to the laboratory. If you use the DEQ laboratory, you will receive the ice pack, acid dropper (if necessary) and small cooler when you request the bottles. Samples must be preserved correctly to be used for compliance purposes. To avoid resampling follow instructions contained with the sample bottle. If you would like more information, contact the DEQ lab, at 517-335-8184, or contact this office.

**Cyanide:** Previously, supplies that chlorinated the water were waived from monitoring for cyanide. The U.S. EPA now requires all supplies to sample the entry point for cyanide.

**UCMR3 Monitoring:** You may have monitoring requirements in 2015 under the third Unregulated Contaminant Monitoring Rule (UCMR3). The U.S. EPA will contact you directly if your water supply is required to monitor in 2015. A list of laboratories certified to analyze the samples collected for UCMR3 is available at <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/upload/lablist.pdf>. Contact the U.S. EPA with questions.

Reminder if Lead and Copper Monitoring Due This Year: Provide individual lead tap results to people who receive water from sites that you sampled, even if lead was not detected, within 30 days of learning the results. Send us a certification that you met all the delivery requirements along with a sample copy of the customer notice within 3 months after the end of the monitoring period. Water supplies that failed to distribute the Consumer Notice of Lead Results must include the following statement in their CCR, "During the year, we failed to provide lead results to persons served at the sites that were tested as required by the Lead and Copper Rule." To download the *Lead and Copper Report and Consumer Notice of Lead Result Certificate* in Microsoft Word or PDF format, visit [www.michigan.gov/deqwater](http://www.michigan.gov/deqwater). Click on Drinking Water, Community Water Supply, and Reporting Forms (under Manuals, Forms & Brochures).

Annual Reports: These reports are due to this office each year.

- The **Cross Connection Report**, due by March 31, describes the status of your local cross connection control program. Manufactured housing communities are exempt from this requirement until 2016.

Each year, water supplies must submit this report, even if a formal program has not been implemented. If cross connections do not exist in your water system, indicate so on the report. Download the Cross Connection Report form from <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Instructions are included with the form.

- The **Annual Pumpage/Usage Report**, due by March 31, is required of water supplies that do not submit monthly operation reports.

This summary of water pumpage and water use must be submitted by each water supply that does not submit a monthly operation report. To manage our natural resources, pumpage data are compiled to determine water use demands in Michigan. Download the Annual Pumpage/Usage Report form from <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Please be sure to indicate the appropriate units on the report (e.g. million gallons or gallons).

- The **Consumer Confidence Report**, due by July 1 to your customers, to your local health department and to this office, describes the quality of the water and characterizes the risks, if any, from exposure to contaminants detected..

Electronic delivery methods may be used to distribute the CCR to bill-paying customers, provided the method is direct. A paper copy must be delivered to bill-paying customers who request it or known to be unable to receive the CCR electronically. For more information on e-delivery, visit [www.michigan.gov/deqwater](http://www.michigan.gov/deqwater). Click on Drinking Water, Community Water Supply, Consumer Confidence Report Rule (under Laws and Rules).



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

March 5, 2015

Mr. Brent Wright, Operations Supervisor  
City Of Flint - DPW  
Flint Water Plant  
4500 North Dort Highway  
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice (VN) – Maximum Contaminant Level for Total  
Trihalomethanes (TTHM)  
Operational Evaluation— Total Trihalomethanes  
1st Quarter 2015 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the city of Flint (City) is in violation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels for disinfection byproducts (MCLs)*, of the 1979 Administrative Code.

In accordance with R 325.10610, *MCLs*, of the 1979 Administrative Code, the MCL for disinfection byproduct TTHM is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City's highest TTHM locational running annual average (LRAA), based on the last four quarters, ending February 28, 2015, is 0.105 mg/L which exceeds the standard, and that two of the eight sample site locations exceed the standard of 0.080 mg/L.

Further, in accordance with R 325.10719, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, when an operational evaluation level (OEL) at a monitoring location for TTHM exceeds 0.080 mg/L, a supply shall conduct an operational evaluation and submit a written report of the evaluation to the DEQ not later than 90 days after being notified of the analytical result that causes the supply to exceed the operational evaluation level. As listed in the table below, our records show that the TTHM OELs for the City exceed 0.080 mg/L at one of the City's eight sample site locations.



TTHM Results (mg/L)	5/21/14	8/21/14	11/20/14	2/17/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.162	0.145	0.059	0.0162	0.096	0.059
DBP2 Liquor Palace 3302 S. Dort Highway	0.112	0.127	0.033	0.0168	0.072	0.049
DBP3 North Flint Auto 6204 N. Saginaw St.	0.097	0.118	0.041	0.0149	0.068	0.047
DBP4 University Market 2501 Flushing Road	0.106	0.196	0.094	0.0245	0.105	0.085
DBP5 Taco Bell 3606 Corunna Road	0.079	0.181	0.034	0.0151	0.078	0.063
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.088	0.144	0.054	0.0192	0.076	0.059
DBP7 Salem Housing 3216 MLK Boulevard	0.082	0.112	0.050	0.0285	0.068	0.055
DBP8 BP Gas Station 822 S. Dort Highway	0.075	0.112	0.036	0.0199	0.061	0.047

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on March 1, 2015, and will continue until TTHM LRAA is below the MCL at all sample sites.

We are encouraged by the results from the most recent round of compliance samples collected on February 17, 2015, which now show individual TTHM levels at less than half of the 0.080 mg/L standard at all locations throughout the City's system. Operational Evaluation Reports from December 2014, and February 2015, have identified possible causes and corrective measures for the previous elevated TTHM levels which we encourage the City to continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported in the most recent quarter, and suggest the City may be able to achieve compliance with the TTHM standard at all sites by continuing these efforts.

Our office is currently reviewing the Operational Evaluation Report dated February 27, 2015, and will provide the City and their consultant with comments, as needed, to help address this MCL violation.

Water systems that exceed the OEL must complete and submit an Operational Evaluation in accordance with Administrative Rule 719I (R 325.10719I) within 90 days of being notified of the violation. **An updated Operational Evaluation report, which incorporates the most recent sample results, must now be completed and received by our office by no later than Friday, May 29, 2015.**

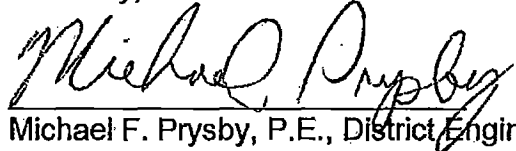
If you have any other factual information you would like us to consider regarding the violation identified in this VN, please provide them in a written response by March 19, 2015.

March 5, 2015

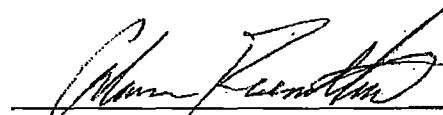
Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery and by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN which contains the minimum required language. The City is encouraged to include additional information regarding its response efforts to this violation. **Please notify your consumers by April 1, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the public notice.** This violation must also be included in your 2015 Consumer Confidence Report, due by July 1, 2016. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below; at [prysbym@michigan.gov](mailto:prysbym@michigan.gov); or [rosenthala@michigan.gov](mailto:rosenthala@michigan.gov); or at DEQ, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,



Michael F. Prysby, P.E., District Engineer  
Lansing District Office  
Office of Drinking Water and Municipal  
Assistance  
517-290-8817



Adam Rosenthal, Environmental Quality  
Analyst  
Lansing District Office  
Office of Drinking Water and Municipal  
Assistance  
517-284-6644

Enclosure

cc: Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5  
Mr. Jerry Ambrose, Emergency Manager, City of Flint  
Mr. Robert Bincsik, City of Flint  
Mr. Howard Croft, City of Flint  
Mr. Daughtry Johnson, City of Flint  
Genesee County Health Department  
Ms. Liane Shekter Smith, DEQ  
Mr. Richard Benzie, DEQ  
Mr. Stephen Busch, DEQ

## IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

### City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, November 20 of 2014, and February 17, 2015). The average of the results at ANY of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the MCL. The standard for TTHMs is 80 micro grams per liter ( $\mu\text{g/L}$ ). The location reporting the highest TTHM level was 105  $\mu\text{g/L}$ ; thus, our water system exceeds the TTHM MCL.

#### What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

#### What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

*People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.*

#### What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015. Our most recent individual sample results were all less than half the 80  $\mu\text{g/L}$  standard, however since compliance is calculated using a locational running annual average (LRAA) of the most recent four quarters, we are still out of compliance with the MCL at two of eight locations.

For more information, please contact Mr. Brent Wright at 517-787-6537, or the Flint Water Plant at 4500 North Dort Highway, Flint, Michigan 48505.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by the City of Flint.

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#### CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

---

Signature

Title

Date Distributed

Reminder to water supplier: This notice/certification must be sent to the Department of Environmental Quality.



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

March 30, 2015

Mr. Brent Wright  
City Of Flint - DPW  
Flint Water Plant  
4500 North Dort Highway  
Flint, Michigan 48505

Dear Mr. Wright:

Subject: City Of Flint WSSN: 02310  
Lead and Copper Monitoring of Drinking Water Taps

We received your report for the monitoring period July 1, 2014, through December 31, 2014.

Action Levels	Results this monitoring period		Next monitoring period	
	90 <sup>th</sup> Percentile	# of Samples Above Action Level	# of Samples Required	Take Samples Within These Dates
Lead 15 parts per billion (ppb)	6.0 ppb	2	100	1/1 and 6/30/2015 Submit results to this office by July 10, 2015
Copper 1.3 parts per million (ppm)	0.11 ppm	0		

Ninety percent of the sites you tested are within action levels under the administrative rules promulgated under the Michigan Safe Drinking Water Act, 1976 PA 399, as amended. These results must be reported on your 2014 Consumer Confidence Report (CCR) due to our office, your customers, and the local health department, by July 1, 2015. Also include the following statement in the CCR, regardless of the lead and copper levels:


*If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Flint is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 1-800-426-4791 or at <http://water.epa.gov/drink/info/lead>.*

Recent changes to the Lead and Copper Rule require you to provide individual lead tap results to people who receive water from sites that were sampled, even if lead was not detected, within 30 days of learning of results. You must also send us a certification that you met all the delivery requirements along with a sample copy of your customer notice by 3 months after the end of the monitoring period. To download the *Lead and Copper Report and Consumer Notice of Lead Result Certificate* in Microsoft Word or PDF format, visit <http://michigan.gov/deq>. Click on Water, Drinking Water, Community Water Supply, and Reporting Forms. Water supplies that fail to distribute the Consumer Notice of Lead Results must include the following statement in their CCR, "During the year, we failed to provide lead results to persons served at the sites that were tested as required by the Lead and Copper Rule."

Samples due the next monitoring period mark your second six month round of monitoring. Please make every attempt to select the same sites used in the previous monitoring period, giving Tier 1 sites first priority. If original sites are unavailable, select replacement sites based on the Tier 1, 2, and 3 criteria. We strongly encourage you to sample early in the monitoring period.

Bottles will NOT be mailed automatically. To order bottles, call the Department of Environmental Quality laboratory at 517-335-8184, or download the form EQP 2301 *Requisition for Water Sample Units* from [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on Key Topics, Laboratory Services, Drinking Water, Obtaining the Necessary Sampling Units, and test list.

Sincerely,



Adam Rosenthal, EQA  
Office of Drinking Water and Municipal Assistance  
Lansing District  
517-284-6644  
[rosenthala@michigan.gov](mailto:rosenthala@michigan.gov)

ar/jlr  
Enclosures

cc: Mr. Michael Glasgow, City of Flint



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

April 3, 2015

Mr. Brent Wright  
City of Flint Water Plant  
4500 North Dort Highway  
Flint, Michigan 48505

Dear: Mr. Wright

SUBJECT: Long Term 2 Enhanced Surface Water Treatment Rule (LT2 Rule)  
2<sup>nd</sup> Round of Source Water Monitoring Requirements

The LT2 Rule was promulgated by the United States Environmental Protection Agency on January 5, 2006. The Department of Environmental Quality (DEQ) adopted this rule into the Administrative Rules in December, 2009. All public water systems that are supplied by a surface water source, and systems supplied by a ground water source under the direct influence of surface water (GWUDI), are subject to this rule.

According to the LT2 Rule, systems are required to conduct an initial and a second round of source water monitoring for each plant that treats a surface water or GWUDI source. Please keep in mind that grandfathering data will not be accepted for the second round of monitoring. This monitoring includes at least one source water *Cryptosporidium*, *E. coli*, and turbidity sample per month for a period of 24 months for systems serving populations greater than 10,000 people. Systems will be assigned to a "treatment bin" based on the results of source water monitoring. The treatment bin specifies the level of *Cryptosporidium* removal and/or inactivation that the system must achieve.

Our records indicate that your system is required to comply with the source water monitoring requirements on Schedule 2 as stated below in Table 1. Therefore, your system is required to submit to the DEQ, a source water monitoring plan for each plant by July 1, 2015, and start the 2<sup>nd</sup> round of monitoring in October, 2015.

Table 1 – LT2 Milestone Dates for 2nd Round of Source Water Sampling

System Population	Schedule	Must submit Source Water Sampling Plan by...	Must begin second round of source water monitoring...
At least 100,000	1	January 1, 2015	April 1, 2015
50,000 – 99,999	2	July 1, 2015	October 1, 2015
10,000 – 49,999	3	July 1, 2016	October 1, 2016
<10,000	4	July 1, 2017	October 1, 2017

Mr. Brent Wright

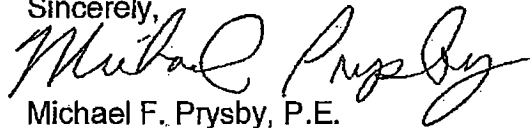
2

April 3, 2015

Enclosed with this letter is a Source Water Sampling Plan template that you can complete and submit to this office to comply with the July 1, 2015, deadline. The template includes instructions and a worksheet that will assist the DEQ in determining if your plan meets the requirements of the LT2 Rule.

If you have any questions about this subject, feel free to contact me at 517-290-8817; prysbym@michigan.gov; or Department of Environmental Quality, Office of Drinking Water and Municipal Assistance, Lansing District Office, 525 West Allegan Street, 1st Floor South, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,



Michael F. Prysby, P.E.  
District Engineer  
Field Operations Section  
Office of Drinking Water and  
Municipal Assistance

Enclosures

cc: Mr. Howard Kroff, City of Flint

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

**PERMIT APPLICATION FOR WATER SUPPLY SYSTEMS**  
(CONSTRUCTION - ALTERATION - ADDITION OR IMPROVEMENT) AS DESCRIBED HEREIN  
*Required under the Authority of 1976 PA 399, as amended*

This application becomes an Act 399 Permit only when signed and issued by authorized Michigan Department of Environmental Quality (DEQ) Staff. See instructions below for completion of this application.

<b>Municipality or Organization, Address and WSSN</b> that will own or control the water facilities to be constructed. This permit is to be issued to: City of Flint Water Service Center 3310 E. Court Street Flint, MI 48506 WSSN: 2310		Permit Stamp Area (DEQ use only)  MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  PERMIT NO. <b>W 151018 APR 3 2015</b>  EXAMINED AND APPROVED FOR COMPLIANCE WITH ACT 399, P.A. 1976 <div style="text-align: right;"><i>MFP</i></div>	
<b>Owner's Contact Person</b> (provide name for questions):  Contact: Rob Bincsik Title: Supervisor of Water Distribution & Sewer Phone: (810)766-7202		<b>4. Project Location</b> (City, Village, Township): City of Flint	
<b>Project Name</b> (Provide phase number if project is segmented):  4-inch Water Main Replacement (contract/phase 1)		<b>5. County</b> (location of project): Genesee	

ISSUED UNDER THE AUTHORITY OF THE DIRECTOR OF THE DEPARTMENT OF ENVIRONMENTAL QUALITY

cc:

Issued by:

*Michael Prybyl*

Reviewed by:

*Michael Prybyl*

☐ **If this box is marked see attached special conditions.**

**Instructions:** Complete items 1 through 5 above and 6 through 21 on the following pages of this application. Print or type all information except for signatures. Mail completed application, plans and specifications, and any attachments to the DEQ District Office having jurisdiction in the area of the proposed construction.

**Please Note:**

- a. This PERMIT only authorizes the construction, alteration, addition or improvement of the water system described herein and is issued solely under the authority of 1976 PA 399, as amended.
- b. The issuance of this PERMIT does not authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other DEQ permits, or approvals from other units of government as may be required by law.
- c. This PERMIT expires two (2) years after the date of issuance in accordance with R 325.11306, 1976 PA 399, administrative rules, unless construction has been initiated prior to expiration.
- d. Noncompliance with the conditions of this permit and the requirements of the Act constitutes a violation of the Act.
- e. Applicant must give notice to public utilities in accordance with 1974 PA 53, (MISS DIG), being Section 460.701 to 460.718 of the Michigan Compiled Laws, and comply with each of the requirements of that Act.
- f. All earth changing activities must be conducted in accordance with the requirements of the Soil Erosion and Sedimentation Control Act, Part 91, 1994 PA 451, as amended.
- g. All construction activity impacting wetlands must be conducted in accordance with the Wetland Protection Act, Part 303, 1994 PA 451, as amended.
- h. Intentionally providing false information in this application constitutes fraud which is punishable by fine and/or imprisonment.
- i. Where applicable for water withdrawals, the issuance of this permit indicates compliance with the requirements of Part 327 of Act 451, Great Lakes Preservation Act.



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

6. **Facilities Description** – In the space below provide a detailed description of the proposed project. Applications without adequate facilities descriptions will be returned. SEE EXAMPLES BELOW. Use additional sheets if needed.

8400 Feet of 24-inch water main from Pasadena Avenue and Iroquois Avenue, South, 20 blocks, along Iroquois Avenue from Pasadena Ave. to Stockdale St.  
 East, Jog of Approx. 100 feet, along Stockdale Street from Iroquois Ave. to Euclid Ave.  
 South, 1 block, along Euclid Avenue from Stockdale St. to Welch Blvd.  
 West, 1 block, along Welch Boulevard from Euclid Ave. to Seminole St.  
 South Southwest, 3 blocks, along Seminole Street from Welch Blvd. to DuPont St.  
 South, 10 blocks, along Dupont Street from Seminole St. to Mackin Road.  
 Water main is stubbed south of Mackin Road for future additions.

**EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES**

Water Mains	500 feet of 8-inch water main in First Street from Main Street north to State Street. <b>OR</b> 250 feet of 12-inch water main in Clark Road from an existing 8-inch main in Third Avenue north to a hydrant.
Booster Stations	A booster station located at the southwest corner of Third Avenue and Main Street, and equipped with two, 15 Hp pumps each rated 150 gpm @ 200 feet TDH. Station includes backup power and all other equipment as required for proper operation.
Elevated Storage Tank	A 300,000 gallon elevated storage tank located in City Park. The proposed tank shall be spherical, all welded construction and supported on a single pedestal. The tank shall be 150 feet in height, 40 feet in diameter with a normal operating range of 130 – 145 feet. The interior coating system shall be ANSI/NSF Standard 61 approved or equivalent. The tank will be equipped with a cathodic protection system, and includes a tank level control system with telemetry.
Chemical Feed	A positive displacement chemical feed pump, rated at 24 gpd @ 110 psi to apply a chlorine solution for Well No. 1. Chlorine is 12.5% NaOCL, ANSI/NSF Standard 60 approved and will be applied at a rate of 1.0 mg/l of actual chlorine.
Water Supply Well	Well No. 3, a 200 foot deep well with 170 feet of 8-inch casing and 30 feet of 8-inch, 10 slot screen. The well will be equipped with a 20 Hp submersible pump and motor rated 200 gpm @ 225 feet TDH, set at 160 feet below land surface.
Treatment Facilities	A 5 million gpd water treatment plant located at the north end of Second Avenue. The facility will include 6 low service pumps, 2 rapid mix basins, 4 flocculation/sedimentation basins, 8 dual media filters, 3 million gallon water storage reservoir and 6 high service pumps. Also included are chemical feed pumps and related appurtenances for the addition of alum, fluoride, phosphate and chlorine.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

**General Project Information -- Complete all boxes below.**

7. Design engineer's name, engineering firm, address, phone number, and email address:

Jeffrey B. Markstrom, P.E.  
 ROWE Professional Services Company  
 P.O. Box 3748  
 Flint, MI 48502  
 (810)341-7500 jmarkstrom@rowepsc.com

8. Indicate who will provide project construction inspection:

- ☐ Organization listed in Box 1.  
☒ Engineering firm listed in Box 7.  
☐ Other - name, address, and phone number listed below.

9. Is a basis of design attached?

☐ YES ☒ NO

If no, briefly explain why a basis of design is not needed.

10. Are sealed and signed engineering plans attached?

☒ YES ☐ NO

If no, briefly explain why engineering plans are not needed.

11. Are sealed and signed construction specifications attached?

☒ YES ☐ NO

If specifications are not attached, they need to be on file at DEQ.

12. Were Recommended Standards for Water Works, Suggested Practice for Water Works, AWWA guidelines, and the requirements of Act 399 and its administrative rules followed?

☒ YES ☐ NO

If no, explain which deviations were made and why.

13. Are all coatings, chemical additives and construction materials ANSI/NSF or other adequate 3<sup>rd</sup> party approved?

☒ YES ☐ NO

If no, describe what coatings, additives or materials did not meet the applicable standard and why.

14. Are all water system facilities being installed in the public right-of-way or a dedicated utility easement?

(For projects not located in the public right-of-way, utility easements must be shown on the plans.)

☒ YES ☐ NO

If no, explain how access will be obtained.

15. Is the project construction activity within a wetland (as defined by Section 324.30301(d)) of Part 303, 1994 PA 451?

☐ YES ☒ NO

If yes, a wetland permit must be obtained.

16. Is the project construction activity within a 100-year floodplain (as defined by R 323.1311(e)) of Part 31, 1994 PA 451, administrative rules?

☐ YES ☒ NO

If yes, a flood plain permit must be obtained.

17. Is the project construction activity within 500 feet of a lake, reservoir, or stream?

☒ YES ☐ NO

If yes, a Soil and Erosion Control Permit must be obtained or indicate if the owner listed in box 2 of this application is an Authorized Public Agency (Section 10 of Part 91, 1994 PA 451) ☐ Owner is APA.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

18. Will the proposed construction activity be part of a project involving the disturbance of five (5) or more acres of land?

☐ YES ☒ NO

If yes, is this activity regulated by the National Pollutant Discharge Elimination System storm water regulations?

☐ YES: NPDES Authorization to discharge storm water from construction activities must be obtained.

☐ NO: Describe why activity is not regulated:

Please call 517-241-8993 with questions regarding the applicability of the storm water regulations.

19. Is the project in or adjacent to a site of suspected or known soil or groundwater contamination?

☐ YES ☒ NO

If yes, attach a copy of a plan acceptable to the DEQ for handling contaminated soils and/or groundwater disturbed during construction. Contact the local DEQ district office for listings of Michigan sites of environmental contamination.

20. IF YOU ARE A CUSTOMER/WHOLESALE/BULK PURCHASER, COMPLETE THE FOLLOWING

1) Name and WSSN of source water supply system (seller) City of Flint

2) Does the water service contract require water producer/seller to review and approve customer/wholesale/bulk purchaser water system construction plans?

☐ YES ☒ NO

If yes to #2, the producer/seller approval letter must be attached when submitted to DEQ.

21. **Owner's Certification** The owner of the proposed facilities or the owner's authorized representative shall complete the owner's certification. It is anticipated that the owner will either be a governmental agency (city, village, township, county, etc.) or a private owner (individual, company, association, etc.) of a Type I public water supply.

OWNER'S CERTIFICATION

I, Daugherty Johnson (name), acting as the Utilities Administrator (title/position) for

(print)

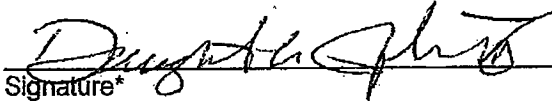
(print)

City of Flint

(print)

(entity owning proposed facilities) certify that this project has

been reviewed and approved as detailed by the Plans and Specifications submitted under this application, and is in compliance with the requirements of 1976 PA 399, as amended, and its administrative rules.



Signature\*

3/20/15

Date

810 766-7135

Phone

\*Original signature only, no photocopies will be accepted.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

PROJECT BASIS OF DESIGN – FOR WATER MAIN PROJECTS

PROJECT NAME: \_\_\_\_\_

For this PROJECT the following information must be provided per Act 399 unless waived by the Department. For projects other than water main installation, or if additional space is needed, attach separate sheet(s) with detailed Basis of Design calculations.

- A. A general map of the initial and ultimate service areas  
☐ Included on engineering plans ☐ Attached separately
- B. Number of service connections served by this permit application \_\_\_\_\_
- C. Total number of service connections ultimately served by entire project \_\_\_\_\_
- D. Residential Equivalent Units (REUs) served by this permit application \_\_\_\_\_
- E. Total Residential Equivalent Units (REUs) ultimately served by entire project \_\_\_\_\_
- F. Water flow rates for proposed project based on REUs listed in "D" and "E" above
1. Initial design average day flow (mgd) \_\_\_\_\_
  2. Initial design maximum day flow (mgd) \_\_\_\_\_
  3. Total design average day flow (mgd) \_\_\_\_\_
  4. Total design maximum day flow (mgd) \_\_\_\_\_
  5. Required fire flows: <sup>(1)</sup> \_\_\_\_\_ gpm for \_\_\_\_\_ hours
- G. Actual flows and pressures of existing system at the connection point(s) <sup>(2)</sup>
- \_\_\_\_\_ gpm at \_\_\_\_\_ psi  
\_\_\_\_\_ gpm at \_\_\_\_\_ psi  
\_\_\_\_\_ gpm at \_\_\_\_\_ psi  
\_\_\_\_\_ gpm at \_\_\_\_\_ psi
- H. Estimated minimum flows and pressures within the proposed water main system <sup>(3)</sup>
- \_\_\_\_\_ gpm at \_\_\_\_\_ psi

(1) Every water system must decide what levels of fire fighting flows they wish to provide. Fire flow should be appropriate for the area (residential, commercial, industrial) being served by the project. Typical fire flow rates can be obtained from the water supply, local fire dept., ISO or AWWA. The water system must then be designed to be able to provide the required fire flows while maintaining at least 20 psi in all portions of the distribution system.

(2) Flows and pressures at the connection points must be given to determine if the existing water main(s) are able to deliver water to the new service area. These numbers can be obtained from a properly modeled and calibrated distribution system hydraulic analysis or hydrant flow tests performed in the field. If more than one connection is proposed, list as needed.

(3) List what the estimated minimum flows can be expected in the proposed water mains based on estimated water demands, head losses, elevation changes and other factors that may affect flows, such as dead end mains.



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

TO: Water Supply Superintendent or Operator-in-Charge

FROM: Adam Rosenthal, Office of Drinking Water and Municipal Assistance, Lansing District Office

DATE: May 6, 2015

SUBJECT: New Lansing District e-mail address for all submittals  
2014 Consumer Confidence Report Reminder  
Updated Lansing District Responsibilities

**New Lansing District e-mail address for all submittals:**

The Lansing District Office has created a new e-mail account to be used for all future submittals: **DEQ-DWMA-Lansing@michigan.gov**

Please forward future electronic submittals to the above e-mail address. This includes monthly operating reports, laboratory reports, reporting forms and siting plans. No further submittals will be accepted into an individual's e-mail inbox after May 31, 2015. Please make sure to inform any laboratory or consultant who has agreed to submit documents on your behalf of this change. Mailed hard copies and faxed documents will still be accepted.

**2014 Consumer Confidence Report Reminder:**

Your annual Consumer Confidence Report (CCR) is due to be delivered by July 1<sup>st</sup>.

You may use any combination of mail, door-to-door, or electronic methods to deliver to bill paying customers. This means you may mail and/or e-mail a message that the CCR is available on the internet or attached to the e-mail. If using the internet, the CCR must be on the internet when customers receive the message and the internet address displayed in the message must lead directly to the entire CCR. The message should tell customers how to request a paper copy. If you normally publish a non-English language CCR, then the notification of CCR availability should also be in that language.

Refer to last year's report and your most recent sample results when preparing this year's report. For more information on preparing your CCR, visit <http://michigan.gov/deq>. Click on Water, Drinking Water, Community Water Supply, and Consumer Confidence Report Rule.

In addition to delivering your CCR to your consumers by July 1<sup>st</sup>, you are required to send a copy to the Department of Environmental Quality and to your local health department. Also send us documentation certifying how you delivered the CCR. Certification of delivery is due to us by October 1<sup>st</sup>, but we encourage you to send it to us when you deliver the CCR by July 1<sup>st</sup>. You can download the *CCR Certificate of Distribution Form* from the web page noted above. **If you e-delivered the CCR, send**

us a sample copy of the notification of CCR availability. For example, you may have put the notification on a water bill.

**Did anybody monitor UCMR in 2014?** Did the United States Environmental Protection Agency (U.S. EPA) direct you to monitor for unregulated contaminants during 2014? Report the average and range of each contaminant detected. Also, provide an explanation of this required monitoring, such as, "Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. Monitoring helps the U.S. EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants. We monitored for these contaminants and results of monitoring are available on request."

Please contact us with your questions. We would like to be available to answer all your questions as you draft your CCR, but we have found that our office is inundated with questions as the deadline nears. You might be best served if you contact us before the end of May.

Failure to deliver the CCR by July 1<sup>st</sup> is a reporting violation and will result in an administrative fine. Contact our office for more information.

**Updated Lansing District Responsibilities:**

Please make note of the following updates to the Lansing staff and their responsible areas:

Michael Prysby, P.E., is responsible for District 11, which includes Genesee County. Mike can be reached on his cell phone at 517-290-8817.

Bethel Skinker, P.E., is responsible for District 12, which includes the counties of Eaton, Ingham, and Clinton (minus manufactured housing). Bethel can be reached on her cell phone at 517-290-0686.

Mark Joseph, P.E., is responsible for District 13, which includes Livingston County and the City of Ann Arbor in Washtenaw County. Mark can be reached on his cell phone at 517-290-0170.

Kurt Swendsen, Engineer, is responsible for District 14, which includes the counties of Gratiot, Lapeer, Shiawassee, and all manufactured housing community supplies in Clinton County. Kurt can be reached at 517-525-1487.

All Livingston County water supplies are again regulated through the Lansing District Office.



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

May 11, 2015

Mr. Howard Kroft, Director of Public Works  
City of Flint  
1101 South Saginaw Street  
Flint, Michigan 48502

WSSN: 02310

Dear Mr. Kroft:

SUBJECT: Flint Cross Connection Control Program

This letter confirms my site visit on April 29, 2015, with Mr. Glen Thomas, Utilities/Cross Connection Division Inspector for the city of Flint. Mr. Stephen Busch from our office was also present. The purpose of the visit, in part, was to discuss the city's Cross Connection Control Program (CCCP).

The city of Flint has made significant progress in recent years regarding the implementation of the city's approved CCCP. This effort has included identification of accounts, inspection and re-inspection of accounts at the approved frequencies, and ensuring the testing of backflow prevention assemblies in accordance with approved frequencies. However, the city's most recent report of annual CCCP activities for 2014 indicates a significant decrease in these activities below minimum requirements, and this deficiency must be address.

Our office fully recognizes the recent staffing loss of the city's previous plumbing inspector and the importance of these plumbing inspection services in providing public health protection, but these activities should not be borne at the cost of the city's CCCP and the protections it provides. Given the bacterial detections that occurred in the city's water distribution system in August and September 2014, along with customer complaints regarding aesthetic water quality, the need for protection through cross connection control are very evident.

We also realize that implementing a CCCP of for a community water system of this magnitude requires a significant commitment of time and personnel. We encourage the city to review CCCP staffing needs and authorize the workforce necessary to comply with the city's approved CCCP requirements.

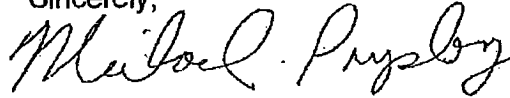
Mr. Howard Kroft

2

May 11, 2015

Should you require further information, please contact me at the telephone number below; via e-mail at prysbym@michigan.gov; or Department of Environmental Quality, P.O. Box 30242, Lansing, Michigan 48909.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael F. Prysby". The signature is fluid and cursive, with the first name "Michael" being more prominent than the last name "Prysby".

Michael F. Prysby, P.E.  
District Engineer  
Office of Drinking Water and  
Municipal Assistance  
Lansing District Office  
(517) 290-8817

mfp/jlr

cc: Mr. Glen Thomas, City of Flint  
Mr. Stephen Busch, P.E.





RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

February 27, 2015

Mr. Gerald Ambrose, Emergency Manager  
City of Flint  
1101 South Saginaw Street  
Flint, Michigan 48502

Dear Mr. Early:

SUBJECT: S2 Grant Program  
City of Flint  
S2 Grant Project No. 9204-01

We are pleased to inform you that your final disbursement request (No. 7), in the amount of \$66,650.62 was paid on February 13, 2014. The project plan was approved on December 13, 2013. The plans and specifications were approved on November 19, 2014. The State Revolving Fund (SRF) loan for Project No. 5439-01 was verified as self-funded via a construction start date of December 3, 2015. The subject S2 Grant project is now administratively complete.

Based on available grant funds, the final S2 Grant amount and local match are \$717,531.49 and \$79,725.51, respectively. The total final project cost is \$797,257. For your files, I am enclosing the S2 Final Project Cost Summary from our database, which reflects and confirms the amounts on your final disbursement request.

Please note that the Michigan Financial Authority (MFA) or the Michigan Department of Environmental Quality (DEQ) may conduct an audit or other review of your project to determine whether Strategic Water Quality Initiatives Fund program requirements have been met. You will be notified in advance of any on-site review. Please retain all project records, whether in written or computerized form, for three years from the date of this letter. If requested, you must provide such records to the MFA, the DEQ, or their agents for inspection.

We are pleased that we could assist you in your effort to protect and preserve the water quality of our state.

If you have any questions, please call the project manager, Mr. Kurt Swendsen at 517-284-5418, or you may contact us by mail at DEQ, P.O. Box 30241, Lansing, Michigan 48909-7741.

Sincerely,

Sonya T. Butler, Chief  
Revolving Loan Section  
Office of Drinking Water and Municipal Assistance  
517-284-5433

Attachment

cc: Mr. Daughtery Johnson, City of Flint  
Mr. Jeff Markstrom, Rowe, Inc., Flint  
Ms. Nichole Dorr, MFA  
Mr. Chuck Bennett, DEQ-Water Resources Division, Lansing District Office  
Ms. Debbie Martinson, DEQ

## S2 Final Project Cost Summary

Project Number 9204-01

Grantee	City of Flint		Location	City of Flint	
Budget Item		Requested Costs	Approved Costs	Allowable %	Approved Final Costs
1	Planning Costs	\$797,257.21	\$797,257.21	100.0000%	\$797,257.21
			Eligible Cost Subtotal		\$797,257.21
			Less 10% Local Match		\$79,725.72
			Total Approved Project Cost		\$717,531.49

**Line Items Final****Planning Costs**

Project Number 9204-01

Item	Desc. or Invoice Number	Requested	Ineligible	Approved	Reason	Cost Type
1	Rowe invoices 67422 - 69146	\$65,568.17	\$0.00	\$65,568.17	DR1, 5 invoices	Incurred
2	invoice 0069223	\$249,360.00	\$0.00	\$249,360.00	DR2	Incurred
3	invoice 70243	\$49,906.40	\$0.00	\$49,906.40	DR3	Incurred
4	invoices 70514, 70686	\$83,150.90	\$0.00	\$83,150.90	DR4	Incurred
5	invoices 70863, 71040, 71215	\$153,141.87	\$0.00	\$153,141.87	DR5	Incurred
6	invoices 71393, 71545, 71719	\$122,073.63	\$0.00	\$122,073.63	DR6	Incurred
7	invoices 72977, 72570, 72787	\$74,056.24	\$0.00	\$74,056.24	DR7	Incurred
Total:		\$797,257.21	\$0.00	\$797,257.21		



**Dayne Walling**  
Mayor

# City of Flint

**Utilities Division**



**Gerald Ambrose**  
Emergency Manager

February 9, 2015

Mr. Kurt Swendsen  
Michigan Department of Environmental Quality  
Constitution Hall  
525 W. Allegan  
Lansing, MI 48933

Re: City of Flint SRF Project Construction Phase  
Project Status Report

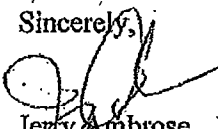
Dear Mr. Swendsen:

The City of Flint is writing this letter to inform the MDEQ that the construction phase of the SRF project is underway. As you are aware, the City of Flint will be self-funding the construction project and will be performing most of the construction activities with our own utility crews. The following is a summary of the project as we stand today:

- Construction activities began on December 3, 2014
- To date our crews have been concentrating on rehabilitation of the sanitary manholes along Gilkey Creek, Swartz Creek, Carman Creek and Thread Creek which are tributaries of the Flint River. We have signed a contract with Liquiforce to perform the sewer lining items that the City of Flint staff is not able to self-perform.
- The City of Flint has allocated 2 crews consisting of 8 staff. The project is being managed by Rob Smith, our Sewer Systems Supervisor.
- Based on our understanding of the project, we anticipate construction activities to continue through the 2015 construction season with a completion date of November 2015.
- We have kept our consultant, ROWE Professional Services Company, apprised of our progress.

We trust that this letter addresses the concerns of the MDEQ relating to the progress of the SRF construction phase. If you have any questions or require additional information, please contact Daugherty Johnson, Utilities Administrator at [djohnson@cityofflint.com](mailto:djohnson@cityofflint.com).

Sincerely,

  
Jerry Ambrose  
Emergency Manager

Cc: Daugherty Johnson, City of Flint  
Jeff Markstrom, ROWE



United States Environmental Protection Agency  
Regional Administrator  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3590

APR 15 2015

The Honorable Daniel Kildee  
House of Representatives  
Washington D.C. 20515

Dear Congressman Kildee:

Thank you for your March 26, 2015 letter seeking clarification as to whether the Safe Drinking Water Act and associated regulations allow the State of Michigan to forgive outstanding principal due on loans that were made to the City of Flint through the Drinking Water State Revolving Fund (DWSRF). Your letter points out the challenges that Flint is currently facing and indicates that the Congressional Research Service has identified potentially applicable legal authority that may provide a basis for loan forgiveness. Unfortunately, the provisions cited in your letter apply only to new loans. The existing loans that are the focus of your inquiry are not eligible for forgiveness.

Under the Safe Drinking Water Act, as well as regulation and recent appropriations language, forgiveness of principal is termed "an additional subsidy." The concept of additional subsidy is set out in Section 1452 (d) of the Act:

(1) Loan subsidy:

Notwithstanding any other provision of this section, in any case in which the State makes a loan pursuant to subsection (a)(2) of this section to a disadvantaged community or to a community that the State expects to become a disadvantaged community as the result of a proposed project, the State may provide additional subsidization (including forgiveness of principal).

(2) Total amount of subsidies:

For each fiscal year, the total amount of loan subsidies made by a State pursuant to paragraph (1) may not exceed 30 percent of the amount of the capitalization grant received by the State for the year.

Under the corresponding regulation, 40 CFR Section 35.3525 (b):

(1) A State may provide loan subsidies (e.g., loans which include principal forgiveness, negative interest rate loans) to benefit communities meeting the State's definition of "disadvantaged" or which the State expects to become "disadvantaged" as a result of the project. Loan subsidies in the form of reduced interest rate loans that are at or above zero percent do not fall under the 30 percent allowance described in paragraph (b)(2) of this section.

(2) A State may take an amount equal to no more than 30 percent of the amount of a particular fiscal year's capitalization grant to provide loan subsidies to disadvantaged communities. If a State does not take the entire 30 percent allowance associated with a particular fiscal year's capitalization grant, it cannot reserve the authority to take the remaining balance of the allowance from future capitalization grants.

The outstanding Flint loans that are the subject of your inquiry were made in 1999, 2000, 2001 and 2003. In these years, the State had the option of providing additional subsidy when making these initial loans. To exercise this option the State would have been required to issue an intended use plan identifying the new, initial financing and to determine Flint's eligibility to receive principal forgiveness. Pursuant to 40 CFR 35.3525 (b)(2), a State may not reserve the authority to provide loan subsidies; this means a state cannot allocate any previously unallocated loan subsidy using current funds.

Since the American Recovery and Reinvestment Act of 2009, Congressional appropriations have provided additional language to further clarify the timing and use of additional subsidy – language which you reference in your letter:

Provided further, that not less than 20 percent but not more than 30 percent of the funds made available under this title to each State for Drinking Water State Revolving Fund capitalization grants shall be used by the State to provide additional subsidy to eligible recipients in the form of forgiveness of principal, negative interest loans, or grants (or any combination of these), and shall be used by the State only where such funds are provided as initial financing for an eligible recipient or to buy, refinance, or restructure the debt obligations of eligible recipients *only where such debt was incurred on or after the date of enactment of this Act:...* (emphasis added).

Consolidated and Further Continuing Appropriations Act, 2015, Pub. Law 113-235

This language provides for additional subsidy (including principal forgiveness) only for debt "incurred on or after the date of enactment of this Act." As the DWSRF loans were provided to Flint prior to the date that this language first appeared in the American Recovery and Reinvestment Act and in subsequent Appropriations Acts, the State does not have authority to provide additional subsidy for those loans.

Although the loans that are the subject of your inquiry are not eligible for loan forgiveness, the City of Flint may have opportunities to seek principal forgiveness in connection with new applications for State SRF funding. EPA is available to provide assistance with that process if requested to do so.

Again, thank you for your letter. If you have further questions, please contact me or your staff may contact Ronna Beckmann or Denise Fortin, the Region 5 Congressional Liaisons, at (312) 886-3000.

Sincerely,

A handwritten signature in dark ink, appearing to read 'S Hedman', with a horizontal line extending to the right.

Susan Hedman  
Regional Administrator

## Olszewski, Rosemarie (DEQ)

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, May 08, 2015 9:47 AM  
**To:** Howard Croft  
**Subject:** RE: May\_Technical Advisory Meeting

Howard,

The May 20<sup>th</sup> Distribution Practices Seminar that I am registered for has been postponed; thus, I will be available to participate in the TAC meeting on Wed. May 20<sup>th</sup> in Flint. See you on the 20<sup>th</sup>.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]  
**Sent:** Monday, May 04, 2015 2:06 PM  
**To:** Brent Wright; Daugherty Johnson; donna. cole; Elizabeth Murphy; [gdn2@aol.com](mailto:gdn2@aol.com); Gerald Ambrose; Howard Croft; James Henry; Jason Lorenz; [jmikewright](mailto:jmikewright); JoAnne Herman; John O'Brien; Kirk Smith; [larry.koehler@mcc.edu](mailto:larry.koehler@mcc.edu); Laura Sullivan; Michael Glasgow; Michael Wright; Mike Lane; Prysby, Mike (DEQ); Norb Birchmeier; Pete Levine; Robert Bincsik; [rosejo@msu.edu](mailto:rosejo@msu.edu); Russell Hudson; Samir Matta; Warren Green; Michael Sargent  
**Cc:** Natasha Henderson  
**Subject:** May\_Technical Advisory Meeting

Technical Advisory team,

We are planning to hold our next advisory meeting on Wednesday May 20th 2:00 pm at City Hall. The focus points of the meeting will be to convey the advancements in the current water quality, the summer implementation plans and **timelines**, and the latest information on test results.

We continue to offer testing and to look for any residential concerns about the water. I encourage all of the hospital and college representatives to bring forward any recent issues that may have arisen and we will look to discuss those as well as any other situations that we are aware of. I will send out an agenda early next week and we will plan on having a conference line available to call in.

Please send any questions or comments to me if there are items that you would like to see addressed.

Thank you,

--  
**Howard Croft**  
Public Works Director  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502  
PH# 810.766.7135 Ext.2043



**Olszewski, Rosemarie (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, September 13, 2015 10:35 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** FW: Flint SRF Letter  
**Attachments:** 20150416053843464.pdf

-----Original Message-----

From: Shekter Smith, Liane (DEQ)  
Sent: Thursday, April 16, 2015 11:46 AM  
To: Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Datema, Maggie (DEQ); Howes, Sarah (DEQ); Anderson, Madhu (DEQ)  
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Butler, Sonya (DEQ); Devereaux, Tracy Jo (DEQ); Winegar, Carla (DEQ)  
Subject: FW: Flint SRF Letter

FYI

-----Original Message-----

From: Marquardt, Steve [<mailto:marquardt.steve@epa.gov>]  
Sent: Thursday, April 16, 2015 10:50 AM  
To: Butler, Sonya (DEQ)  
Cc: Cossa, Laura  
Subject: FW: Flint SRF Letter

Let me know if questions/issues. thanks

Steve Marquardt  
USEPA Region 5  
77 West Jackson Blvd  
Chicago, Illinois 60604  
(312)353-3214

-----Original Message-----

From: Deamer, Eileen  
Sent: Wednesday, April 15, 2015 5:53 PM  
To: Baltazar, Debbie; Marquardt, Steve  
Cc: Hyde, Tinka  
Subject: FW: Flint SRF Letter

Final Letter signed today.

Thanks,  
Ei

-----Original Message-----

From: Deamer, Eileen

Sent: Wednesday, April 15, 2015 5:52 PM

To: [jordan.dickinson@mail.house.gov](mailto:jordan.dickinson@mail.house.gov)

Cc: Hovey, Amy; Beckmann, Ronna Erin; Fortin, Denise

Subject: Flint SRF Letter

Jordan -

Please find attached a copy of EPA's response to your March 26, 2015 letter regarding loan forgiveness and the City of Flint.

Thank you,

Eileen Deamer  
(312) 886-1728



United States Environmental Protection Agency  
Regional Administrator  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3590

APR 15 2015

The Honorable Daniel Kildee  
House of Representatives  
Washington D.C. 20515

Dear Congressman Kildee:

Thank you for your March 26, 2015 letter seeking clarification as to whether the Safe Drinking Water Act and associated regulations allow the State of Michigan to forgive outstanding principal due on loans that were made to the City of Flint through the Drinking Water State Revolving Fund (DWSRF). Your letter points out the challenges that Flint is currently facing and indicates that the Congressional Research Service has identified potentially applicable legal authority that may provide a basis for loan forgiveness. Unfortunately, the provisions cited in your letter apply only to new loans. The existing loans that are the focus of your inquiry are not eligible for forgiveness.

Under the Safe Drinking Water Act, as well as regulation and recent appropriations language, forgiveness of principal is termed "an additional subsidy." The concept of additional subsidy is set out in Section 1452 (d) of the Act:

(1) Loan subsidy:

Notwithstanding any other provision of this section, in any case in which the State makes a loan pursuant to subsection (a)(2) of this section to a disadvantaged community or to a community that the State expects to become a disadvantaged community as the result of a proposed project, the State may provide additional subsidization (including forgiveness of principal).

(2) Total amount of subsidies:

For each fiscal year, the total amount of loan subsidies made by a State pursuant to paragraph (1) may not exceed 30 percent of the amount of the capitalization grant received by the State for the year.

Under the corresponding regulation, 40 CFR Section 35.3525 (b):

(1) A State may provide loan subsidies (e.g., loans which include principal forgiveness, negative interest rate loans) to benefit communities meeting the State's definition of "disadvantaged" or which the State expects to become "disadvantaged" as a result of the project. Loan subsidies in the form of reduced interest rate loans that are at or above zero percent do not fall under the 30 percent allowance described in paragraph (b)(2) of this section.

(2) A State may take an amount equal to no more than 30 percent of the amount of a particular fiscal year's capitalization grant to provide loan subsidies to disadvantaged communities. If a State does not take the entire 30 percent allowance associated with a particular fiscal year's capitalization grant, it cannot reserve the authority to take the remaining balance of the allowance from future capitalization grants.

The outstanding Flint loans that are the subject of your inquiry were made in 1999, 2000, 2001 and 2003. In these years, the State had the option of providing additional subsidy when making these initial loans. To exercise this option the State would have been required to issue an intended use plan identifying the new, initial financing and to determine Flint's eligibility to receive principal forgiveness. Pursuant to 40 CFR 35.3525 (b)(2), a State may not reserve the authority to provide loan subsidies; this means a state cannot allocate any previously unallocated loan subsidy using current funds.

Since the American Recovery and Reinvestment Act of 2009, Congressional appropriations have provided additional language to further clarify the timing and use of additional subsidy – language which you reference in your letter:

Provided further, that not less than 20 percent but not more than 30 percent of the funds made available under this title to each State for Drinking Water State Revolving Fund capitalization grants shall be used by the State to provide additional subsidy to eligible recipients in the form of forgiveness of principal, negative interest loans, or grants (or any combination of these), and shall be used by the State only where such funds are provided as initial financing for an eligible recipient or to buy, refinance, or restructure the debt obligations of eligible recipients *only where such debt was incurred on or after the date of enactment of this Act:...* (emphasis added).

Consolidated and Further Continuing Appropriations Act, 2015, Pub. Law 113-235

This language provides for additional subsidy (including principal forgiveness) only for debt "incurred on or after the date of enactment of this Act." As the DWSRF loans were provided to Flint prior to the date that this language first appeared in the American Recovery and Reinvestment Act and in subsequent Appropriations Acts, the State does not have authority to provide additional subsidy for those loans.

Although the loans that are the subject of your inquiry are not eligible for loan forgiveness, the City of Flint may have opportunities to seek principal forgiveness in connection with new applications for State SRF funding. EPA is available to provide assistance with that process if requested to do so.

Again, thank you for your letter. If you have further questions, please contact me or your staff may contact Ronna Beckmann or Denise Fortin, the Region 5 Congressional Liaisons, at (312) 886-3000.

Sincerely,

A handwritten signature in dark ink, appearing to read "S. Hedman", with a long horizontal line extending to the right.

Susan Hedman  
Regional Administrator

**Olszewski, Rosemarie (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Wednesday, May 13, 2015 3:08 PM  
**To:** Michael Glasgow  
**Subject:** RE: distribution WQPs

got it. Now I need the 1<sup>st</sup> qtr 2015.

thanks,

Adam Rosenthal, EQA  
MDEQ – Office of Drinking Water and Municipal Assistance  
Lansing District – Constitution Hall 1SW  
PO Box 30242  
Lansing, MI 48909  
517-284-6644  
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:  
[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Wednesday, May 13, 2015 11:54 AM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Re: distribution WQPs

Adam,

Here are the 2014 WQM parameters during full time plant operation.

Mike

On Tue, May 12, 2015 at 4:32 PM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Good afternoon Mike, we did not receive a 2<sup>nd</sup> half 2014 water quality parameters in the distribution system for the City of Flint. Please email me a copy when you get this.

thanks,

Adam Rosenthal, EQA

MDEQ – Office of Drinking Water and Municipal Assistance

Lansing District – Constitution Hall 1SW

PO Box 30242

Lansing, MI 48909

517-284-6644

fax: 517-241-3571

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[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)

**Olszewski, Rosemarie (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Thursday, May 14, 2015 9:50 AM  
**To:** Michael Glasgow  
**Subject:** RE: distribution WQPs

thank you sir.

Adam

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Thursday, May 14, 2015 8:53 AM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Re: distribution WQPs

Adam,

Here is the 1st quarter WQP for 2015.

Mike

On Wed, May 13, 2015 at 3:07 PM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:  
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DEQ-DWMA-Lansing@michigan.gov

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**Sent:** Wednesday, May 13, 2015 11:54 AM  
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**Subject:** Re: distribution WQPs

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---

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[DEQ-DWMA-Lansing@michigan.gov](mailto:DEQ-DWMA-Lansing@michigan.gov)



**MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES (MDHHS)**  
**BLOOD LEAD LEVEL TEST RESULTS FOR FLINT ZIP CODES 48501-48507**  
**SUMMARY AS OF OCTOBER 30, 2015**

**Executive Summary**

This report is generated by MDHHS to track Blood Lead Level test results in Flint, Michigan.

- Counts on this report include both capillary and venous blood tests. People who have had multiple tests are counted only once.
- Since 10/1/2015, an additional 963 people have been tested in Flint.
- Continued testing efforts by Genessee County Health Department, MDHHS and local medical personnel have identified 18 children with blood lead levels greater than or equal to 5µg/dL since 10/1/2015.
- Three percent of the children younger than 6 years old tested since 10/1/2015 have had blood lead levels greater than or equal to 5µg/dL.
- Additional testing is ongoing. Counts will vary as new results are added.

**Number of People Tested for Lead in Flint**

Total number of people tested for lead from 1/1/2013 to 4/14/2014	4657
Total number of people tested for lead from 4/15/2014 to 9/30/2015	5017
Total number of people tested for lead since 10/1/2015:	963

**Children Younger than 6 Years Old with Blood Lead Levels (BLL) ≥5µg/dL**

Total number of children tested for lead from 1/1/2013 to 4/14/2014	3811
Number of child BLL test results ≥5µg/dL from 1/1/2013 to 4/14/2014	112
Total number of children tested for lead from 4/15/2014 to 9/30/2015:	4156
Number of child BLL test results ≥5µg/dL from 4/15/2014 to 9/30/2015:	181
Total number of children tested for lead since 10/1/2015:	385
Number of child BLL test results ≥5µg/dL since 10/1/2015:	12

**Adults (18 Years or Older) with Blood Lead Levels (BLL) ≥5µg/dL**

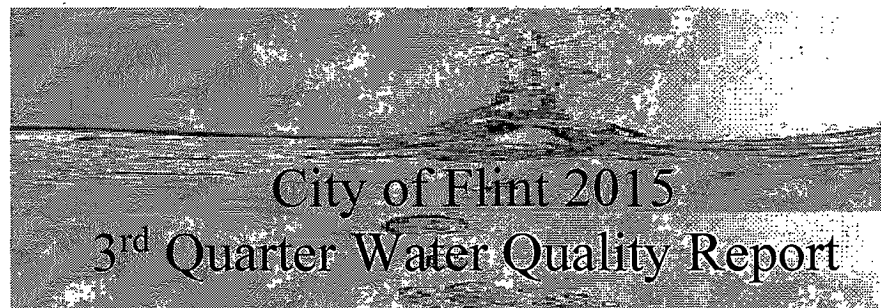
Total number of adults tested for lead from 1/1/2013 to 4/14/2014	170
Number of adult BLL test results ≥5µg/dL from 1/1/2013 to 4/14/2014	22
Total number of adults tested for lead from 4/15/2014 to 9/30/2015:	207
Number of adult BLL test results ≥5µg/dL from 4/15/2014 to 9/30/2015:	13
Total number of adults tested for lead since 10/1/2015:	289
Number of adult BLL test results ≥5µg/dL since 10/1/2015:	6

**Children 6 to 17 Years Old with Blood Lead Levels (BLL) ≥5µg/dL**

Total number of children tested for lead from 1/1/2013 to 4/14/2014	676
Number of child BLL test results ≥5µg/dL from 1/1/2013 to 4/14/2014	5
Total number of children tested for lead from 4/15/2014 to 9/30/2015:	654
Number of child BLL test results ≥5µg/dL from 4/15/2014 to 9/30/2015:	7
Total number of children tested for lead since 10/1/2015:	289
Number of child BLL test results ≥5µg/dL since 10/1/2015:	6

Customer Service Center  
City Hall  
1101 S. Saginaw St.  
Flint, MI 48501

Postage



The Quarterly Water Quality Report provides important information about your drinking water. This report includes information about the water source, current drinking water issues, lead information, water filters, 3<sup>rd</sup> quarter work accomplished, and a water timeline of events. The City of Flint Department of Utilities is dedicated to providing quality drinking water to the residents of the community. The Flint Water Plant operates and maintains a certified drinking water laboratory to assure compliance with all state and federal regulations, and is committed to prompt and thorough notification to the consumers if there is any reason for concern about the quality of the drinking water. Information about your drinking water is available on the City of Flint web page at [www.cityofflint.com](http://www.cityofflint.com) or by calling the City of Flint Water Plant at **(810) 787-6537**. The Safe Drinking Water Hotline at **(800) 426-4791** is a resource for health related questions and water quality issues. General drinking water information can also be found on the U.S. Environmental Protection Agency (EPA) web site at [www.epa.gov/safewater/](http://www.epa.gov/safewater/).

## Water Source

The City of Flint began using the Flint River as a water source in May of 2014. After 16 months of treating water from the Flint River, the City became aware that the level of corrosiveness found in Flint River water could result in more lead leaching from service lines and household plumbing. Reports of elevated blood lead levels in children and expert analysis resulted in the City's Technical Advisory Committee making a recommendation to return to the previous source of water while waiting for the KWA to provide water from Lake Huron.

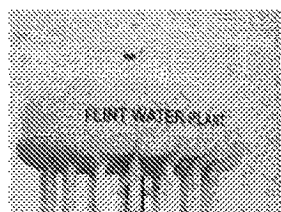
On Friday October 16<sup>th</sup>, 2015, with the consent of Governor Snyder, the City returned to Detroit as the primary source of drinking water. The decision, along with the Technical Advisory Committee's recommendation followed two consecutive lead and copper test periods that exceeded 5ug/L which calls for additional action. In addition to the switch, the City has submitted a final corrosion control design to the DEQ for comments and approval. The City has requested to use the corrosion control as an additive to treated water it will be required when the city begins treating raw water from the Karegnondi Water Authority which is anticipated to begin in the summer of 2016.

In order to make the transition possible, the City contributed \$2 Million dollars, the Mott Foundation contributed \$4 Million dollars, and the State of Michigan contributed \$ 6 Million dollars.

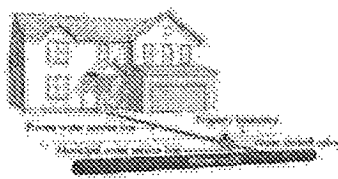
## Current Drinking Water Issues & Lead Information

There has been a heightened awareness of lead leaching into drinking water through service lines and household plumbing. The City's Technical Advisory Committee has enlisted the support of EPA lead experts and is working with State of Michigan representatives to increase testing, rebuild public confidence, and implement long-term solutions to lead. It is recommended that everyone get their water tested, obtain a water filter, and check with a plumber to evaluate the type and condition of your household plumbing. The City is currently mapping all of its lead service lines and working to develop a program to get lines changed over time.

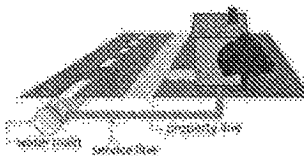
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Flint is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 5 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.



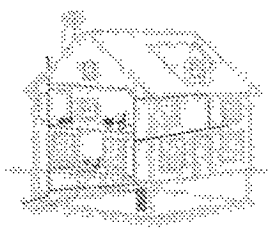
No lead in water  
leaving the  
Treatment Plant.



Little or no lead in  
water in the  
transmission mains.



Lead can leach into  
water through  
service lines.



Lead can leach into  
water through  
household plumbing.

### Water Filters & Testing

Free water filters have been made available to current Flint residents at several locations. The MDHHS and the Genesee County Community Action Resource Department (GCCARD) are providing Free National Sanitation Foundation certified water filters at the following locations.

Residents receiving MDHHS assistance are encouraged to visit either the **125 E. Union St.** or **4809 Clio Rd.** MDHHS office location to obtain a free, certified home water filter. Residents who are not currently enrolled in MDHHS assistance programs should visit the (GCCARD) offices located at **2727 Lippincott** and **601 N. Saginaw** in Flint.

Staff will be onsite at all four locations from **9 a.m. to 4 p.m., Monday through Friday**, to distribute filters and assist residents who have questions about proper installation.

If you want more information on obtaining a water filter, please call 211.

#### Other suggestions related to water safety and testing:

- We recommend that everyone get their water tested. Call us at (810)-787-6537.
- Contact the Health Department about having your child's blood tested (810)-257-3612.
- It is advisable to have a plumber check your household plumbing.
- Check your faucet aerator (large lead solder particles can occasionally get lodged in here).

### Temporary issues to be aware of when Changing Water Sources

Changing water sources back to Detroit will not fully eliminate the lead concerns. The potential for lead to leach off of certain water service lines or household plumbing will continue to exist regardless of the water source. The City is committed to increased testing, better communication, and developing a lead service line map to identify all of the City owned lead service lines.

As the city changes water sources you can expect the following:

- It could take up to three weeks for the switch in water source to reach all taps in the City.
- Over the next several weeks, we will be winterizing our hydrants which will result in discoloration of the water but will also help accelerate the water flowing through the system.
- Lead will continue to leach off of certain service lines and household plumbing.
- Main breaks could result as a change in source water occurs.
- Water could have discoloration or cloudiness, if this happens, run your faucet until the water clears, if this lasts longer than 20 minutes please report it to our water service center at (810)-766-7202.

## **Water Timeline**

A timeline of events, beginning with signing the KWA contract leading up to the current status of switching back to our previous source of water is available on the City website and can be found by visiting the "water" page located under "residents". Please email [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com) with your questions or to request a water test or, call the Water Plant at (810)-787-6537.

## **3rd Quarter Events**

### **July**

- Completed the evaluation of over 8000 valves in the system and identified over 2300 that are currently inoperable. The repair of these valves will be budgeted and worked into our multi-year Capital Improvement Plan.

### **August**

- Successfully completed the installation of Granulated Activated Carbon at the water treatment plant which reduced the TTHM level in the water and helped bring the City back into compliance with the Safe Drinking Water Act.

### **September**

- Leak Detection on all 600 miles of the distribution system has started and is over halfway complete. Several dozen leaks have been identified and repairs continue as more leaks are found. This has decreased the amount of water loss existing in the system.
- Construction of a load out facility at our wastewater plant is on target for completion by November and will allow the City to eliminate the use of the incinerator resulting in significant annual savings.
- Over 3500 new water meters have been installed this year creating better accuracy, accountability, and decreasing the number of estimated reads on water & sewer bills.

## **Contact Information**

### **Water Treatment Plant - (810)-787-6537**

Request a water test.

Request a tour of the Plant.

Ask questions about water quality.

### **Water Service Center - (810)-766-7202**

Report a water leak or other system issues.

### **Water Pollution Control - (810)-766-7210**

Inquiries related to wastewater treatment.

Inquiries related to converting methane gas into energy.

### **Customer Service – (810)-766-7015**

Questions about your water & sewer bill.

### **Water Filters – 211**

Questions about water filters.

## 2015 3<sup>rd</sup> Quarter Regulated Detected Contaminants – Flint River as Source

Inorganic & Organic Chemicals, Metals, and Pesticides – Monitored at treatment plant						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Inorganic Chemicals						
Fluoride	mg/L	4	4	0.84	0.64 – 0.84	No
Nitrate	mg/L	10	10	N.D.	N/A	No
Metals						
Barium	mg/L	2	2	0.02	N/A	No

More than 100 other chemicals were monitored from July through September that were not detected.

The various classification groups of these chemicals include metals, carbamates, herbicides, pesticides, organics, and radiologicals.

Total Organic Carbon, TOC – Monitored at treatment plant			
Regulated Contaminant	Required Monthly % Removal	Minimum Monthly % Removal	Monthly % Removal Ranges
Total Organic Carbon	50	60	60 - 87

Turbidity – Monitored at treatment plant		
Highest Single Measurement (Cannot exceed 1NTU)	Lowest Monthly % of Samples Meeting Turbidity Limit (0.3 NTU in 95% of samples)	Violation
0.18	100 %	No

Disinfectant Residuals – Monitored in the distribution system						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Total Chlorine Residual	mg/L	4.0	4.0	4.0	0.2 – 4.0	No

Microbiological Contaminants – Monitored in the distribution system				
Regulated Contaminant	MCLG	MCL	Highest Number detected (in 1 month)	Violation
Total Coliform bacteria	0	The presence of coliform bacteria in > 5% of monthly samples	1	No
<i>E. coli</i> Bacteria	0	0	0	No

Lead & Copper – Monitored from consumers tap					
Regulated Contaminant	Unit of Measure	MCLG	Action Level AL	Number of samples over AL	Total # of Samples Tested from January - September
Lead	ug/L	0	15	16	189
Copper	mg/L	1.3	1.3	0	189

Disinfection By-Products – Monitored in the distribution system and from treatment plant						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Total Trihalomethanes (TTHM)	ug/L	n/a	80	90.3	42.6 – 90.3	N/A*
Haloacetic Acids (HAA)	ug/L	n/a	60	15.0	2.0 – 15.0	N/A*
Bromate	ug/L	10	10	N.D.	N/A	N/A*

\*Violation based on locational running annual average for TTHM & HAA5, violation for bromate based on yearly average.



### Key to the Detected Contaminant Tables

Symbol	Abbreviation for	Definition/Explanation
>	Greater than	
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, dibromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
LRAA	Locational Running Annual Average	
MCL	Maximum Contaminant Level	The highest level of a contaminant that is allowed in water. MCLs are set as close to the MCLG's as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal	The level of contaminant in drinking water below which there is no known or expected risk to health.
mg/L	Milligrams per Liter	A milligram = 1/1000 gram 1 milligram per liter is equal to 1ppm
MRDL	Maximum Residual Disinfectant Level	The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG	Maximum Residual Disinfectant Level Goal	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRLDG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
n/a	Not Applicable	
ND	Not Detected	
NTU	Nephelometric Turbidity Units	Measures the cloudiness of water.
pCi/L	Picocuries per Liter	A measure of radioactivity. Picocurie (pCi) means the quantity of radioactive material producing 2.22 nuclear transformations per minute.
ppb	Parts Per Billion (one in one billion)	The ppb is equivalent to micrograms per liter. A microgram = 1/1000 milligram.
ppm	Parts Per Million (one in one million)	The ppm is equivalent to milligrams per liter. A milligram = 1/1000 gram.
RAA	Running Annual Average	
TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
TTHM	Total Trihalomethanes	Total Trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform. Compliance is based on total.
ug/L	Micrograms per Liter	A microgram = 1/1,000,000 gram 1 microgram per liter is equal to 1ppb



## - The Action Plan -

- Immediately test all Flint public schools to ensure that **drinking water is safe**. Testing will also be available at no cost to any other school in Flint.
- **Expand health exposure testing** of individual residences.
- **Offer water testing** at no cost to Flint residents to assure water is safe.
- **Expedite optimizing corrosion controls** in the Flint drinking water system.
- **Assemble the "Safe Drinking Water Technical Advisory Committee"** to ensure the best technology, practices and science are being utilized, and add an expert from the EPA's Office of Research and Development to the group.
- **Accelerate water system improvements** to address replacement of lead service lines.
- Expedite completion of **Karegnondi Water Authority**.
- Gov. Rick Snyder names Dr. Eden Wells as the Flint Drinking Water Public Health Advisor to ensure safe drinking water.
- **Provide water filters** to residents of Flint.
- Expand a comprehensive lead education initiative.

To get your water tested for free, please call the city of Flint Water Plant at (810) 787-6537 and then press 1

Visit [www.mi.gov/FlintWater](http://www.mi.gov/FlintWater) for more information

# REQUEST FOR WATER ANALYSIS

Billing Information *PLEASE PRINT*

Name DEQ	DWL Account number M99953604	
Mailing Address		
City Lansing	State MI	Zip 48909



DRINKING WATER LABORATORY - LANSING  
DEPARTMENT OF ENVIRONMENTAL QUALITY

WSSN (Type I-II Public Water)	Does sample contain chlorine? <input checked="" type="radio"/> Yes <input type="radio"/> No	For questions call us at: <b>517-335-8184</b>
SAMPLE SOURCE 9 - Other	SAMPLING PURPOSE 9 - Other	
	SAMPLE POINT 9 - Other	

REPORT RESULTS TO: (PLEASE PRINT) NOTE: RESULTS WILL BE EMAILED TO YOUR LOCAL COUNTY HEALTH DEPARTMENT

Name Steve Busch	E-mail address buschs@michigan.gov	
Mailing Address 525 W. Allegan	Area Code & Phone number	
City Lansing	State MI	ZIP Code 48909

**SAMPLE COLLECTION INFORMATION (PLEASE PRINT)**

Sample Collector Name	Date Collected	Time Collected <input type="radio"/> AM <input type="radio"/> PM	
Collector Code <input type="radio"/> 0 - County Personnel <input type="radio"/> 1 - Water Supply Operator <input type="radio"/> 2 - DEQ DW Staff <input type="radio"/> 4 - DEQ Staff other than DW <input type="radio"/> 9 - Other			
Collection Site (Street Address) Southwestern Classical Academy		System/Owner Name	
Township (If known)		Section (If known)	
City Flint	County Genesee	ZIP Code 48507	Well Number (If more than one)
Sampling Point (kitchen, bath, etc.)		Site Code or Permit Number (If known)	

TEST CODE	INVESTIGATION UNIT #	DRINKING WATER TEST	FEE	<input checked="" type="checkbox"/>
CCUB	32CC - 125 mL	Lead/Copper for Investigation	\$26.00	
CCUB	36CC - 1 Liter	Lead/Copper for Investigation	\$26.00	

# Chemical testing could have predicted Flint's water crisis

By John Wisely and By Robin Erb, Detroit Free Press 7:14 a.m. EDT October 11, 2015



(Photo: Ryan Garza, Detroit Free Press)

Chemical tests could have predicted the corrosion in the pipes that is now being blamed for endangering the health of thousands of vulnerable Flint residents by elevating lead levels in their water supply, experts say.

As the city scrambles to reconnect to the Detroit water system, the absence of such testing on the Flint River water is one of many missed opportunities that might have lessened or avoided the crisis, they say.

"Any competent person should have seen this water will eat up iron and eat up lead," Marc Edwards, a Virginia Tech professor and national expert on pipe corrosion, told the Free Press. Edwards said his own research shows that Flint River water, without additional controls, corrodes the lead inside pipes at 19 times the rate of water piped from Detroit.



DETROIT FREE PRESS

[Why are lead levels in children higher in 2 Flint ZIP codes?](#)

<http://www.freep.com/story/news/local/michigan/2015/10/10/lead-danger-basics/73683934/>

Among red flags that popped up over the last 18 months:

- General Motors announced in October 2014 that it was pulling its engine plant off Flint water after workers there began noticing rust spots on newly machined parts. The city approved letting GM switch to water from Flint Township, but didn't change its own water treatment procedures.
- The University of Michigan-Flint alerted city officials that it found elevated lead levels in its water in January, prompting the school to shut off some drinking fountains and add water filters to others.
- Testing in the fall of 2014 found E. coli in the city's water system, prompting "boil water" notices. The city's procedures for killing the E. coli produced chemical by-products known as trihalomethanes, which can cause cancer with long-term exposure. The city had to adopt additional measures to reduce them.

"Common sense tells you that the Flint River is not your first choice of drinking water," said Shawn McElmurry, who teaches civil and environmental engineering at Wayne State University and has followed Flint closely.



DETROIT FREE PRESS

[Q & A on Flint's water troubles](#)

<http://www.freep.com/story/news/local/michigan/2015/10/10/flint-water-ga/73693500/>

Experts say the testing could have been done before the switch from the Detroit system. But officials from the Michigan Department of Environmental Quality note that that kind of testing isn't required under federal drinking-water rules and has never been done in Michigan. What's more, they said, the Flint River water, treated in the city's plant, was already approved as a backup supply in case of interrupted service from Detroit.

Other experts said the testing is more nuanced, part art and part science. Still, they acknowledge that by examining things such as the acidity of water and other factors, engineers could have estimated how much corrosion to expect once water from the Flint River was pumped into homes and businesses across the city.

"Not every engineer in our field could do it, it's a pretty specialized area," said David Cornwell, a Virginia-based engineering consultant and a technical adviser to the National Drinking Water Advisory Council, a group of experts that works with the Environmental Protection Agency on drinking water issues.

DETROIT FREE PRESS

[Flint doctor makes state see light about lead in water](#)



<http://www.freep.com/story/news/local/michigan/2015/10/10/hanna-altisha-profile/73600120/>

The fix now will cost \$12 million — a combination of money from the state, the city and the Flint-based non-profit C.S. Mott Foundation, which has pledged \$4 million to help pay Detroit for the water while Flint waits to connect to a new water authority in partnership with Genesee County.

#### **Water woes began shortly after switch from Detroit**

Flint began using Flint River water as its main supply in April 2014. Before that, it bought Lake Huron water that was treated and delivered by the Detroit Water and Sewerage Department. Detroit ended that deal one day after Flint voted to join Genesee County in forming the Karegnondi Water Authority, which plans to build its own Lake Huron intake and pipe the water to the Flint Water Plant.

Flint officials wanted to remain on Detroit's system, but the two sides couldn't agree on a price and a contract length.

Once the switch to river water was made, the city, which was operating under a state-appointed emergency financial manager, faced one problem after another. Residents packed city council meetings and held protest marches to voice their anger about water quality.

Experts say Flint's lead problems could have been held in check if the city had added phosphates to the water, as Detroit has done for years. The treatment doesn't eliminate lead entirely, but it does form a film over the pipes themselves, effectively sealing in the lead and reducing the amount in the water to acceptable levels.

But when Flint switched to river water, it didn't add phosphates. Instead it added lime to soften the water.

"The lime-softening process has the added benefit of some corrosion control," said Liane Smith, chief of Michigan's Office of Drinking Water and Municipal Assistance.

Smith said that once the switch was made, the state began testing for lead and copper, as is required by the federal Environmental Protection Agency.

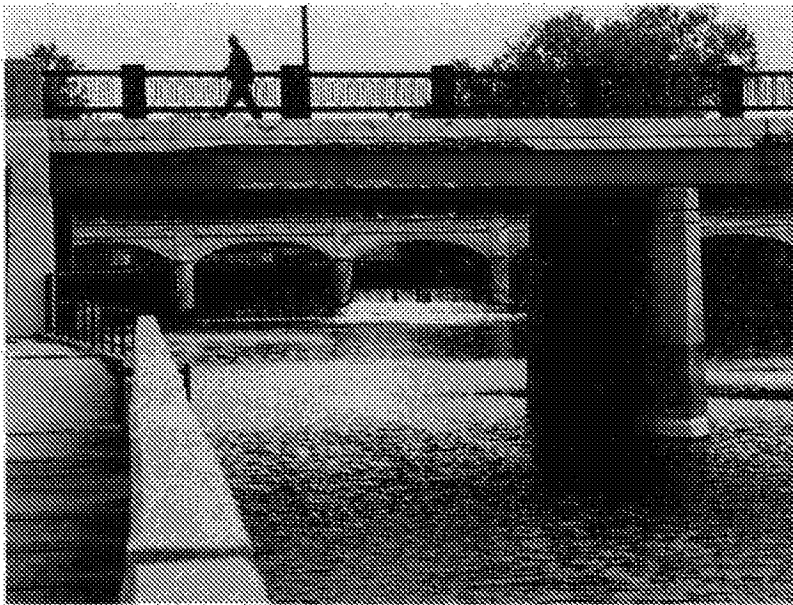
"Any new supply that comes along has to do two six-month rounds of monitoring for lead and copper out in their distribution system," Smith said. If those tests show corrosion, additional steps, such as perhaps adding phosphates, are supposed to be followed.

The first round of testing completed in December 2014 showed lead levels of 6 parts per billion. The second round, completed in June of this year, showed they had almost doubled to 11 parts per billion. The EPA requires a remediation plan when levels reach 15 parts per billion and can demand action even below that mark on systems that serve more than 50,000 people.

Cornwell said phosphates are considered more effective than lime softening and they don't raise treatment costs substantially. But they have side effects, he said.

"The negative is that nobody really likes phosphates out in the environment," he said, noting they can find their way into rivers and lakes, fueling algae blooms such as the ones in Lake Erie.

"There is more to it than saying we're just going to pump phosphates," Cornwell said. "You may have to make other adjustments."



A man crosses a bridge over the Flint River near the Hamilton Dam in downtown Flint on Thursday, Oct. 8, 2015. Flint has been getting its drinking water from the river since last year. (Photo: Ryan Garza, Detroit Free Press)

#### Flint River water a challenge to clean up

Flint River water was always going to pose more treatment challenges than the cold, clear water that comes from the bottom of Lake Huron, experts said.

The river has been marked by decades of industrial pollution. Its tributaries channel farmland run-off into it and its temperature varies by season. Warmer water can promote bacteria growth. All of those factors make treating it to drinking-water standards more difficult.

"The city was doing the best it could" to clean up pollutants, Edwards said, but added that corrosivity was inevitable.

He blamed the problems on a lack of expertise rather than intentional wrongdoing.

"I think it started relatively innocently. They didn't understand testing and they didn't understand corrosivity," he said.

Last month, Edwards' research group released results of corrosion tests it conducted on Flint's water. For the test, researchers used copper pipe with lead solder, which is common in older homes.

The tests showed Flint River water without added phosphates corroded the lead at 19 times the rate of Detroit water. Even when phosphates were added, it corroded at 16 times the rate of the Detroit water.

"From the second it was switched, it was doomed from the lead problem," Edwards said.

When residents began complaining about the water, the city and state should have begun to rethink their testing, Edwards said.

Problems were evident soon after the switch.

In August last year, E. coli was found in the water and residents were urged to boil it before drinking it. The city treated it with disinfectant, but that produced by-products in the water known as trihalomethanes. Long-term exposure to them can cause cancer, so the city began making treatment adjustments.

Then as summer turned to fall, workers at Flint's GM engine plant began seeing rust on newly machined engine parts. GM's lab tests found high levels of chloride in the water used to wash down metal shavings and cool parts heated from the rapid machining action inside the plant, GM spokesman Tom Wickham said.

GM tried to treat the water in the plant. It had drinking water delivered and tankers brought water for operations, Wickham said.

But it eventually sought to connect to Flint Township's water system, which is supplied by Detroit.

In December the connection was finalized and Detroit water began flowing to the plant, via Flint Township.

In January 2015, lead was showing up at the University of Michigan's Flint campus. School leaders become concerned about the water supply after the city issued "boil water" advisories to kill E. coli and realized they'd never done routine, thorough water testing.

Tests in January and February showed elevated levels of lead and other problems in isolated areas —specifically in two infrequently used drinking fountains in two older buildings.

Follow-up testing found other elevated levels of lead, and those sinks and fountains then were either fitted with filters or removed, said Mike Lane, director of the environment, health and safety department

He said officials suspected the problem was in their pipes but notified the city anyway.

In June, Miguel Del Toral of the Environmental Protection Agency drafted an internal memo noting the problems Flint had experienced with E. coli and the by-products of the chemicals used to treat it.

"A major concern from a public health standpoint is lack of corrosion control treatment in the city of Flint for mitigating lead and copper levels in the drinking water," Del Toral wrote.

The memo caused a stir when the American Civil Liberties Union exposed it. But the EPA told the Free Press on Friday that the memo was a draft that was never delivered to MDEQ officials, including Smith, whose names appear on it.

The EPA did say it discussed the concerns raised in the memo with MDEQ officials in July, but the agency did not respond immediately to a request for details.

## Leaching lead not unique to Flint

The problem of lead leaching into drinking water isn't unique to Flint. Across Michigan and around the country, pipes that carry water from the mains under the street into homes, businesses and schools often contain lead. Inside homes and business, many older plumbing fixtures and soldered pipes also contain it.

Cornwell said officials from across the nation have formed a working group to review the lead and copper rules and look for ways to improve them. Among the things being considered is a national effort to remove lead pipes from water systems.

But even if a national consensus formed around that idea, the process would take years, Cornwell said. A funding source for such a massive project also would be needed.

Still, he said, removing the pipes is the only surefire way to eliminate lead from the system.

"We can only do so much with water chemistry," he said. "We can only turn the knob so much."

Contact John Wisely: 313-222-6825 or [jwisely@freepress.com](mailto:jwisely@freepress.com)

Contact Robin Erb: 313-222-2708 or [rerb@freepress.com](mailto:rerb@freepress.com).

## TIME LINE

April 16, 2013: Flint signs agreement to join the Karegnondi Water Authority.

April 17, 2013: Detroit terminates contract with Flint, giving it one year to find a new water source.

April 24, 2014: Flint switches from Detroit water to Flint River water.

April 30, 2014: Flint closes all valves connecting to Detroit water supply.

June-Sept. 2014: Flint residents complain about smell, taste and discoloration of water.

Dec. 16, 2014: Michigan Department of Environment Quality cites Flint for exceeding limits on disinfection by-products.

Dec. 27, 2014: Flint's General Motors engine plant, citing high chloride levels in the water, switches off its hook-up to Flint, drawing water instead from neighboring Flint Township.

Jan. 9, 2015: Concerned about Flint's water warnings, University of Michigan's Flint campus begins testing its water, detecting lead in isolated,

infrequently used areas.

June 24, 2015: Environmental Protection Agency drafts a report raising concerns about lead in Flint's water system as a result of corrosion. It doesn't send the report, but discusses its concerns with MDEQ officials in July.

Sept. 24, 2015: Dr. Mona Hanna-Attisha releases data showing spike in blood-lead levels in Flint children.

Oct. 2, 2015: State officials tell room packed with reporters that there's a problem with Flint's water.

Read or Share this story: <http://on.freep.com/1LoJP7S>



**From:** [Prysby, Mike \(DEQ\)](#)  
**To:** [Busch, Stephen \(DEQ\)](#); [Benzie, Richard \(DEQ\)](#)  
**Subject:** Fwd: Information Request and Documentation  
**Date:** Wednesday, March 11, 2015 7:35:28 AM  
**Attachments:** [image001.gif](#)  
[ATT00001.htm](#)  
[FOIA Request Flint Water.doc](#)  
[ATT00002.htm](#)

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**Cc:** "Valacak, Mark" <[MVALACAK@gchd.us](mailto:MVALACAK@gchd.us)>, "Cupal, Suzanne" <[scupal@gchd.us](mailto:scupal@gchd.us)>, "Hasan, Shurooq" <[shasan@gchd.us](mailto:shasan@gchd.us)>, "Childs, Bonnie" <[BCHILDS@gchd.us](mailto:BCHILDS@gchd.us)>, "Hallwood, Dawn" <[dhallwood@gchd.us](mailto:dhallwood@gchd.us)>, "Johnson, M.D., Gary" <[GJOHNSON@gchd.us](mailto:GJOHNSON@gchd.us)>  
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Respectfully,

Jim

**Jim Henry**

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Environmental Health Supervisor

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Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
Flint, MI 48502

## **RE: Flint Water Plant Information Request**

Dear FOIA Coordinator,

Under provisions of the Michigan Freedom of Information Act (MCLA 15.231 et seq; MSA 4.1801 (1) et seq) please provide copies of the following:

Provide specific water testing locations and laboratory results within the City of Flint public water system for Coliform, E-coli, Heterotrophic Bacteria and Trihalomethanes from January 1, 2010 to January 27, 2015. Provide any additional water testing that has been conducted for identifying potential public health risks. Include any available mapping of the water testing areas.

Provide a map delineating the boundaries of the City of Flint water distribution system. Include any changes to the boundaries, along with corresponding dates from January 1, 2014 to January 27, 2015.

Provide a map or list of locations, detailing dead ends, pooling, low pressure and any additional areas of concern within the City of Flint water distribution system. Include any modifications to the water distribution system addressing concerns, along with corresponding dates from January 1, 2014 to January 27, 2015.

If you determine that any of the requested information is exempt from disclosure, please detail what is being withheld and cite the exemption under FOIA. I anticipate the request being filled within five working days of receipt of this letter, as provided under FOIA. Please contact me at (810) 257-3618 if there are fees associated to comply with this request.

Sincerely,

**Jim Henry**

Jim Henry  
Environmental Health Supervisor  
Genesee County Health Department  
630 S. Saginaw Street  
Flint, MI 48502

**Better Life Through Better Health**

**Floyd J. McCree Courts & Human Services Building ♦ 630 S. Saginaw Street, Ste. 4 ♦ Flint, Michigan 48502-1540**

**Burton Branch ♦ G-3373 S. Saginaw Street ♦ Burton, Michigan 48529**

Main Phone 810-257-3612 ♦ Visit us at: [www.gchd.us](http://www.gchd.us)

**From:** Busch, Stephen (DEQ)  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Wednesday, March 11, 2015 9:36:56 AM

---

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We can respond to Jim when you get back in, but at this point while the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:35 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Fwd: Information Request and Documentation

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**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
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Jim

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Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Benzie, Richard (DEQ)  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Wednesday, March 11, 2015 6:28:00 PM

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It was – buried was not quite the case – it was still on my screen, but down quite a few from the chain of all unopened items.

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**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 11, 2015 3:26 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** FW: Information Request and Documentation

I did cc you. Must be buried in the inbox.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 11, 2015 9:37 AM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

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E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



**From:** Benzie, Richard (DEQ)  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** FW: Information Request and Documentation  
**Date:** Wednesday, March 11, 2015 6:56:00 PM  
**Attachments:** [image001.gif](#)  
[ATT00001.htm](#)  
[FOIA Request Flint Water.doc](#)  
[ATT00002.htm](#)

---

FYI. I think the word document is the only real attachment.

---

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**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Wednesday, March 11, 2015 7:32:00 PM

---

Liane,

Steve's initial response is below.

As I see it, we need a plan of action fast.

- 1) Inform DEQ management, including legislative and media liaisons; suggest additional communication with DCH
- 2) Prepare response to Genesee County email – did anyone in ODWMA or DEQ have any contact with Genesee County about Legionella and if so, when and what? Was anyone in ODWMA or DEQ requested to meet with Genesee County to discuss Legionella and if so, when, and did they “decline” to meet?
- 3) Contact Flint to alert them of County's concerns and determine their response to the January 27<sup>th</sup> FOIA request.
- 4) Arrange for a meeting with Genesee County and other parties as deemed appropriate by DEQ management – DCH, Flint, Governor's Office, etc.; Establish a “Lead” agency but also develop a team approach to move forward and determine an appropriate, common message as well as when such information should be shared and by whom. Determine how long has Genesee County, DCH, and Flint been aware of the increased cases of Legionella and what the message should be about delays in public notification.
- 5) Determine additional steps – possible monitoring protocols, premise plumbing treatment options, public precautions if any, etc.; Consider possible CDC assistance.
- 6) Determine if EPA will be willing to share their draft Legionella guidance document being developed by a workgroup consisting of EPA, the States of Ohio, Minnesota, Pennsylvania, Washington, Nevada, Missouri and Nebraska, and CDC. The guidance will characterize the effectiveness of treatment technologies to address Legionella and address relevant regulatory implications. The primary implication is that individual customers that install “secondary” treatment systems to remove, reduce or prevent Legionella in their premise plumbing (such as hospitals are already doing) become by federal definition, public water systems required to comply with all applicable requirements of the Safe Drinking Water Act. The guidance has been delayed by internal reviews at EPA, but they are hoping to be able to have a final document in summer of 2015.

That's all I can think of at this point. Let me know what you think.

---

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Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:35 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Fwd: Information Request and Documentation

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Sent from my iPhone

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**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
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Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Prysby, Mike (DEQ)  
**To:** Busch, Stephen (DEQ); Benzle, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Thursday, March 12, 2015 7:47:08 AM

---

Steve, Richard,

I did not receive a meeting request from Jim or the LHD concerning this matter.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 11, 2015 9:37 AM  
**To:** Prysby, Mike (DEQ); Benzle, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

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MDEQ

517-643-2314

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**Cc:** Shaler, Karen (DEQ); Benzle, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ)  
**Subject:** FW: Information Request and Documentation  
**Date:** Thursday, March 12, 2015 8:41:00 AM  
**Attachments:** FOIA Request Flint Water.doc  
**Importance:** High

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# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
Flint, MI 48502

## RE: Flint Water Plant Information Request

Dear FOIA Coordinator,

Under provisions of the Michigan Freedom of Information Act (MCLA 15.231 et seq; MSA 4.1801 (1) et seq) please provide copies of the following:

Provide specific water testing locations and laboratory results within the City of Flint public water system for Coliform, E-coli, Heterotrophic Bacteria and Trihalomethanes from January 1, 2010 to January 27, 2015. Provide any additional water testing that has been conducted for identifying potential public health risks. Include any available mapping of the water testing areas.

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If you determine that any of the requested information is exempt from disclosure, please detail what is being withheld and cite the exemption under FOIA. I anticipate the request being filled within five working days of receipt of this letter, as provided under FOIA. Please contact me at (810) 257-3618 if there are fees associated to comply with this request.

Sincerely,

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Flint, MI 48502

Better Life Through Better Health

Floyd J. McCree Courts & Human Services Building ♦ 630 S. Saginaw Street, Ste. 4 ♦ Flint, Michigan 48502-1540

Burton Branch ♦ G-3373 S. Saginaw Street ♦ Burton, Michigan 48529

Main Phone 810-257-3612 ♦ Visit us at: [www.gchd.us](http://www.gchd.us)

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**To:** Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)  
**Cc:** Shaler, Karen (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Thursday, March 12, 2015 8:49:54 AM  
**Attachments:** FOIA Request Flint Water.doc

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Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

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**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** FW: Information Request and Documentation  
**Date:** Thursday, March 12, 2015 2:48:04 PM  
**Attachments:** FOIA Request Flint Water.doc

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Corinne —

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Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

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Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
Flint, MI 48502

## RE: Flint Water Plant Information Request

Dear FOIA Coordinator,

Under provisions of the Michigan Freedom of Information Act (MCLA 15.231 et seq; MSA 4.1801 (1) et seq) please provide copies of the following:

Provide specific water testing locations and laboratory results within the City of Flint public water system for Coliform, E-coli, Heterotrophic Bacteria and Trihalomethanes from January 1, 2010 to January 27, 2015. Provide any additional water testing that has been conducted for identifying potential public health risks. Include any available mapping of the water testing areas.

Provide a map delineating the boundaries of the City of Flint water distribution system. Include any changes to the boundaries, along with corresponding dates from January 1, 2014 to January 27, 2015.

Provide a map or list of locations, detailing dead ends, pooling, low pressure and any additional areas of concern within the City of Flint water distribution system. Include any modifications to the water distribution system addressing concerns, along with corresponding dates from January 1, 2014 to January 27, 2015.

If you determine that any of the requested information is exempt from disclosure, please detail what is being withheld and cite the exemption under FOIA. I anticipate the request being filled within five working days of receipt of this letter, as provided under FOIA. Please contact me at (810) 257-3618 if there are fees associated to comply with this request.

Sincerely,

**Jim Henry**

Jim Henry  
Environmental Health Supervisor  
Genesee County Health Department  
630 S. Saginaw Street  
Flint, MI 48502

Better Life Through Better Health

Floyd J. McCree Courts & Human Services Building ♦ 630 S. Saginaw Street, Ste. 4 ♦ Flint, Michigan 48502-1540

Burton Branch ♦ G-3373 S. Saginaw Street ♦ Burton, Michigan 48529

Main Phone 810-257-3612 ♦ Visit us at: [www.gchd.us](http://www.gchd.us)

**From:** Miller, Corinne (DCH)  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Thursday, March 12, 2015 3:02:27 PM

---

Thank you Liane.

I asked staff for a status update after we spoke.

Corinne Miller, PhD  
State Epidemiologist and Director  
Bureau of Disease Control, Prevention and Epidemiology  
Michigan Department of Community Health  
201 Townsend Street  
Lansing, Michigan 48913  
Telephone: 517-335-8900  
Fax: 517-335-8263

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 12, 2015 2:48 PM  
**To:** Miller, Corinne (DCH)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** FW: Information Request and Documentation

Corinne —

This is the e-mail I mentioned this morning.

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

Begin forwarded message:

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)"  
<prysbym@michigan.gov>, Elizabeth Murphy  
<emurphy@cityofflint.com>, "Natasha Henderson"  
<nhenderson@cityofflint.com>, Jerry Ambrose

<[gambrose49@gmail.com](mailto:gambrose49@gmail.com)>, Dayne Walling <[dwalling@cityofflint.com](mailto:dwalling@cityofflint.com)>  
Cc: "Valacak, Mark" <[MVALACAK@gchd.us](mailto:MVALACAK@gchd.us)>, "Cupal, Suzanne" <[scupal@gchd.us](mailto:scupal@gchd.us)>, "Hasan, Shurooq" <[shasan@gchd.us](mailto:shasan@gchd.us)>, "Childs, Bonnie" <[BCHILDS@gchd.us](mailto:BCHILDS@gchd.us)>, "Hallwood, Dawn" <[dhallwood@gchd.us](mailto:dhallwood@gchd.us)>, "Johnson, M.D., Gary" <[GJOHNSON@gchd.us](mailto:GJOHNSON@gchd.us)>  
**Subject: Information Request and Documentation**

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Respectfully,

Jim

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E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Benzie, Richard (DEQ)  
**To:** Poy, Thomas; Crooks, Jennifer  
**Subject:** FW: Information Request and Documentation  
**Date:** Thursday, March 12, 2015 7:21:00 PM  
**Attachments:** FOIA Request Flint Water.doc  
**Importance:** High

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Please treat this information as confidential at this point as I am not sure when and who will bring this matter forward for public knowledge. But I thought you should get a heads up that another problem could become public soon. Liane forwarded the message from Genesee County to our management this morning along with the attached document, but we have not received a response yet. She also contacted the Department of Community Health and they are following up with the County. They told Liane that they have been offering assistance to the county on this matter on several occasions and had not received a response.

Steve and Mike indicated that they were not contacted by the county on this issue as stated in the attachment, so we don't know who they did contact or if they did. We suspect they are escalating the request for information at this time, but we also wonder why they need much of the information they requested from the city to conduct their investigation, which should have been completed by now. Both DEQ and DCH had the same reaction to their statement about the river before they complete their investigation.

Steve, Liane and I will be meeting tomorrow morning to discuss further. We may be meeting with the executive office as well.

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:33 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Information Request and Documentation

Liane,

Steve's initial response is below.

As I see it, we need a plan of action fast.

- 1) Inform DEQ management, including legislative and media liaisons; suggest additional communication with DCH
- 2) Prepare response to Genesee County email – did anyone in ODWMA or DEQ have any contact with Genesee County about Legionella and if so, when and what? Was anyone in ODWMA or DEQ requested to meet with Genesee County to discuss Legionella and if so, when, and did they “decline” to meet?
- 3) Contact Flint to alert them of County's concerns and determine their response to the January 27<sup>th</sup> FOIA request.
- 4) Arrange for a meeting with Genesee County and other parties as deemed appropriate by DEQ management – DCH, Flint, Governor's Office, etc.; Establish a “Lead” agency but also develop a team approach to move forward and determine an appropriate, common

message as well as when such information should be shared and by whom. Determine how long has Genesee County, DCH, and Flint been aware of the increased cases of Legionella and what the message should be about delays in public notification.

- 5) Determine additional steps – possible monitoring protocols, premise plumbing treatment options, public precautions if any, etc.; Consider possible CDC assistance.
- 6) Determine if EPA will be willing to share their draft Legionella guidance document being developed by a workgroup consisting of EPA, the States of Ohio, Minnesota, Pennsylvania, Washington, Nevada, Missouri and Nebraska, and CDC. The guidance will characterize the effectiveness of treatment technologies to address Legionella and address relevant regulatory implications. The primary implication is that individual customers that install “secondary” treatment systems to remove, reduce or prevent Legionella in their premise plumbing (such as hospitals are already doing) become by federal definition, public water systems required to comply with all applicable requirements of the Safe Drinking Water Act. The guidance has been delayed by internal reviews at EPA, but they are hoping to be able to have a final document in summer of 2015.

That's all I can think of at this point. Let me know what you think.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 11, 2015 9:37 AM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

Mike,

I am not aware of a meeting request from Jim Henry or the Genesee County Health Department as indicated in his email below. Did you receive any such request?

The FOIA is specifically directed to the City of Flint not the DEQ. If requested some of the information asked for regarding Total Coliform and E.Coli compliance sampling could be provided, but there may also be additional construction repair sampling data.

We can respond to Jim when you get back in, but at this point while the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:35 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Fwd: Information Request and Documentation

I am out today and will return tomorrow. Having trouble getting the attachment to open on my phone...but since it appears to be a FOIA regarding Legionella, I felt it is prudent to get this message to you. I will be available tomorrow to discuss or compile any info that we have.

Sent from my iPhone

Begin forwarded message:

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
**Subject:** Information Request and Documentation

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The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

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I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim



**Jim Henry**

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Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Busch, Stephen (DEQ)  
**To:** jhenry@gchd.us  
**Cc:** Pryby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Friday, March 13, 2015 3:46:59 PM  
**Attachments:** FOIA Request Flint Water.doc

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Mr. Henry,

The January 27, 2015, FOIA request you provided was directed to the City of Flint, not the DEQ. The DEQ has no record of a FOIA request from your office for such information. It is our understanding that the City has responded to your FOIA request, has helped you adequately redefine your request within the City's scope of public record to address such ambiguities as "any additional areas of concern", and provided you with additional information beyond the scope of your request.

The DEQ fully recognizes the public health threat posed to individuals that contract Legionnaires' Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act. Your email below claims that you have explicitly explained the situation to our Department. However, since contacting our office early last October to indicate a rise in cases, we have not received any further information regarding your epidemiological investigation into this matter.

Further, conclusions that legionella is coming from the public water system without the presentation of any substantiating evidence from your epidemiologic investigation appears premature and prejudice toward that end.

It is highly unlikely that legionella would be present in treated water coming from the City of Flint water treatment plant given the treatment plant's use of ozone along with complete treatment and chlorine disinfect contact time to comply with federal surface water treatment rules for potable water. Detections of total coliform or heterotrophic bacteria in the City's public water distribution system indicate an environment where bacterial growth may be supported. However, there is no direct correlation that can be made to the presence of legionella. While total organic carbon levels in potable water may serve as a food source for bacteria growth in private plumbing system, water temperatures in the City's distribution system are below legionella growth range, and chlorine residual levels would also limit such growth.

Our office agrees that water main breaks, water leaks, and system repairs are possible vectors for legionella to enter the public water system. These should be investigated as part of your epidemiology. DEQ staff can be made available to assist GCHD and the City regarding such matters, but to date no request by GCHD for any such meeting has been received, let alone declined as alleged in your email.

If GCHD is seeking assistance to complete its epidemiological investigation regarding this matter, such resource requests should be directed to the Michigan Department of Community Health. Our Office agrees that a multi-agency partnership would be beneficial to move forward and develop a unified response. In that respect, if our Office can be of any further assistance you may contact me directly.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
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Jim

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Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Shekter Smith, Liane (DEQ)  
**To:** Wurfel, Brad (DEQ); Benzie, Richard (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** FW: Information Request and Documentation  
**Date:** Friday, March 13, 2015 3:55:20 PM  
**Attachments:** FOIA Request Flint Water.doc

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FYI – in case you weren't bcc'd on this note. Just wanted to make sure we stay on the same page....

Nicely done Steve and Mike.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 13, 2015 3:47 PM  
**To:** jhenry@gchd.us  
**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation

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Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
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**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
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Jim

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Jim Henry RS, MBA

Environmental Health Supervisor

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Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Busch, Stephen (DEQ)  
**To:** Howard Croft (hcroft@cityofflint.com); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com;  
Daugherty Johnson (djohnson@cityofflint.com)  
**Cc:** Gerald Ambrose (gambrose@cityofflint.com); nhenderson@cityofflint.com; Prysby, Mike (DEQ)  
**Subject:** Water Quality Optimization Strategy  
**Date:** Tuesday, March 17, 2015 2:01:50 PM

---

Howard,

As Mike Prysby and I mentioned during our phone call earlier today, the City should be taking action to optimize water quality in the City's distribution system which will in turn provide the City's water customers with water quality that helps limit the potential for legionella occurrence in premise plumbing. It is recognized that contraction of Legionnaires' Disease is not from ingestion of potable water and not regulated under Safe Drinking Water Act requirements. Further, there is currently no direct evidence of legionella in the City's public water system. However, actions by the City of Flint water system can help minimize the potential for an outbreak in customer plumbing systems.

These actions include the following:

- Water main pigging and flushing to remove biofilm, tuberculation, and sediment throughout the distribution system. Failure to remove such material will limit the effectiveness of any disinfectant. Pigging is the preferred process and equipment can be obtained at minimal cost. As the growth range for legionella starts at 68 degrees F, conducting this work as soon as possible in the spring and early summer with cooler temperatures would help reduce the potential for formation under warmer water conditions.
- Maintain pH levels of 7.2-7.8 in finished water and distribution system when possible to maximize the disinfection and oxidation potential of the hypochlorous acid residual (versus the less potent hypochlorite ion). Any optimized corrosion control plan practices regarding pH levels must be taken into consideration.
- Maintain a minimum free chlorine residual of 0.5 mg/L throughout the distribution system when possible. Continuous residual at this level has been shown to be effective in control of legionella. (This will need to be balanced with requirements to limit TTHM formation and comply with the TTHM standard.)
- Continuous operation and optimization of the ozone treatment equipment to treat raw source water. Ozone is highly effective in the destruction of legionella bacteria.
- Conduct routine monitoring for legionella bacteria at the water treatment plant tap and at locations in the distribution system. Note: sample locations must take water directly off the main and not be from premise plumbing systems. Distribution locations could include storage tank inlets or pumping stations. Monitoring at the WTP plant tap would demonstrate removal of any legionella present in raw source water. A private laboratory that specializes in water sample analysis for legionella would need to be used.
- Optimize water treatment plant operation for pathogen reduction under surface water



treatment rule requirements. Optimizing the removal for similar pathogens can help reduce the potential for legionella.

A conference call with City staff would probably be best to facilitate further discussions of these actions in more detail. Mike and I can make ourselves available this week to discuss and answer any questions.

Stephen Busch, P.E.,  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** Shekter Smith, Liane (DEQ)  
**To:** Devereaux, Tracy Jo (DEQ)  
**Subject:** ODWMA 2015 SMT Presentation.pptx  
**Date:** Tuesday, March 17, 2015 3:26:32 PM  
**Attachments:** ODWMA 2015 SMT Presentation.pptx

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A first draft to get a feel for where this is heading....

# Office of Drinking Water and Municipal Assistance

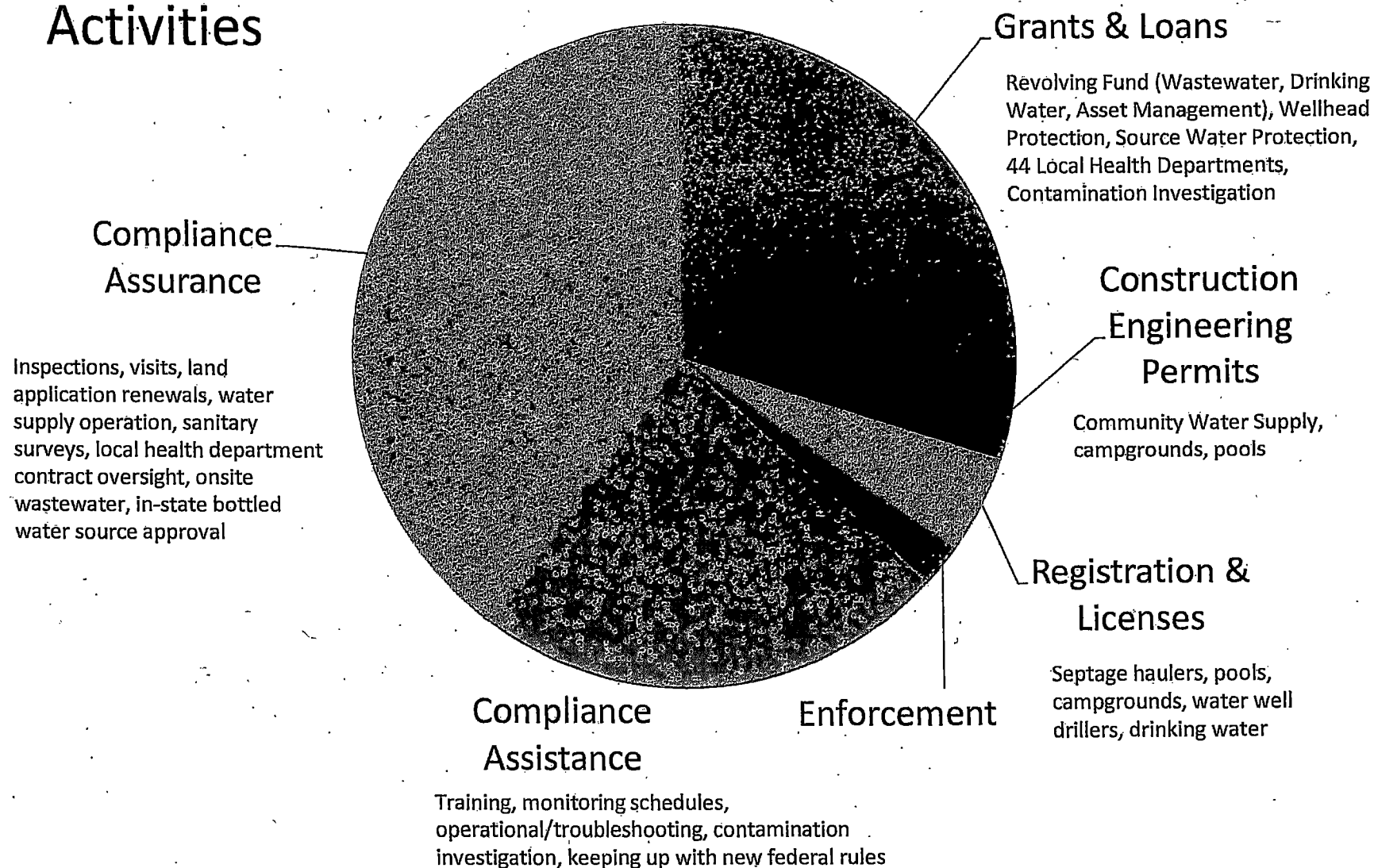
- Insert an optical illusion – two faces or lady in a dress.....

- Pie Chart here:
- # FTE's in the following programs:
  - CWS
  - NCWS
  - Well construction
  - Revolving Loan
  - Septage
  - On-site Wastewater
  - Campgrounds
  - Pools

- Pie Chart Here
- Funding
- Revolving Loan
- Campgrounds
- Pools
- PWS
- Septage
- On-site Wastewater

# Office of Drinking Water & Municipal Assistance

## Activities



## 2014 Office Factoids:

- 1400 Community water systems serving 7.6 million residents and visitors.
- 11,000 Noncommunity water systems.
- 4500 public swimming pools.
- 1200 campgrounds.
- 1.4 million water wells.
- 1.3 million onsite wastewater systems.
- \$67M DWRF low-interest loans obligated.
- \$270M SRF low-interest loans obligated.
- \$97M SAW grants obligated.

# Permits

- Community Water Supply
- Campgrounds
- Pools



# 2014 Grants/Loans

- Revolving Loan
  - SRF                      \$190M low-interest loans obligated
  - DWRF                    \$50M low-interest loans obligated
  - SWQIF                  \$97M SAW grants
- Wellhead Protection
- Source Water Protection
- Local Health Departments

# Grants to LHDs

- Campgrounds
- Pools
- Septage
- On-site Wastewater
- Noncommunity Water Supply
- Well Construction/P-III
- Contamination Investigation

# Licenses/Registrations

- Pools: 5,400 licensed public swimming pools
- Campgrounds: 1,300 licensed campgrounds
- Well Drillers: 850 registered drinking water well drillers/contractors
- Septage Haulers: 390 licensed haulers
- Septage Hauling Vehicles: 850 licensed vehicles
- PWS Operators: 4,500 certified operators

# Enforcement

- Well Drillers
- Campgrounds
- Public Water Supply
  - Monitoring and Reporting
  - Treatment Techniques/Maximum Contaminant Levels
  - Significant Deficiencies
  - Fees

# Compliance Assurance

# Compliance Assistance

## Other distractions.....

- Water Strategy
- Water Use Advisory Council Implementation
- Alternative Institutional Controls
- Use of shallow wells for infiltration
- Legionella
- MEAP Certification
- Affordability of water (water shut offs)

**From:** Crooks, Jennifer  
**To:** Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Date:** Wednesday, March 18, 2015 9:54:03 AM  
**Importance:** High

---

Hi, Richard. I know you've been in training this week, but I'm wondering if you'd be able to call Tom Poy when you get a minute to discuss this issue below. He understands that you may need to keep some internal discussions under your hat right now, but he wants to touch base with you—He's working on this from EPA end, and wants to provide assistance to you all:

Jen

**From:** Benzie, Richard (DEQ) [mailto:BENZIER@michigan.gov]  
**Sent:** Thursday, March 12, 2015 6:22 PM  
**To:** Poy, Thomas; Crooks, Jennifer  
**Subject:** FW: Information Request and Documentation  
**Importance:** High

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Steve, Liane and I will be meeting tomorrow morning to discuss further. We may be meeting with the executive office as well.

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:33 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Information Request and Documentation

Liane,

Steve's initial response is below.

As I see it, we need a plan of action fast.



- 1) Inform DEQ management, including legislative and media liaisons; suggest additional communication with DCH
- 2) Prepare response to Genesee County email – did anyone in ODWMA or DEQ have any contact with Genesee County about Legionella and if so, when and what? Was anyone in ODWMA or DEQ requested to meet with Genesee County to discuss Legionella and if so, when, and did they “decline” to meet?
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- 4) Arrange for a meeting with Genesee County and other parties as deemed appropriate by DEQ management – DCH, Flint, Governor’s Office, etc.; Establish a “Lead” agency but also develop a team approach to move forward and determine an appropriate, common message as well as when such information should be shared and by whom. Determine how long has Genesee County, DCH, and Flint been aware of the increased cases of Legionella and what the message should be about delays in public notification.
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We can respond to Jim when you get back in, but at this point while the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water

Treatment Plant or in the community water supply distribution system at this time.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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Sent from my iPhone

Begin forwarded message:

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
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Hello everyone,

The Genesee County Health Department has made several written and verbal requests for specific information since October, 2014, including a Freedom of Information Act Request on January 27, 2015. The information still has not been received and the city's lack of cooperation continues to prevent my office from performing our responsibilities.

The Genesee County Health Department has the responsibility to conduct illness investigations and consider all potential sources, this is not optional. In 2014, Genesee County experienced a significant increase of confirmed Legionella illnesses relative to previous years. Legionella can be a deadly, waterborne disease that typically affects the respiratory system.

The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

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Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**From:** Benzie, Richard (DEQ)  
**To:** Crooks, Jennifer  
**Cc:** Shekter Smith, Liane (DEQ)  
**Subject:** Re: Information Request and Documentation  
**Date:** Wednesday, March 18, 2015 10:29:17 AM

---

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**Date:** Wednesday, March 18, 2015 10:33:25 AM

---

Sure, I'll try Tom now.

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

---

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<[gambrose49@gmail.com](mailto:gambrose49@gmail.com)>, Dayne Walling <[dwalling@cityofflint.com](mailto:dwalling@cityofflint.com)>  
**Cc:** "Valacak, Mark" <[MVALACAK@gchd.us](mailto:MVALACAK@gchd.us)>, "Cupal, Suzanne"  
<[scupal@gchd.us](mailto:scupal@gchd.us)>, "Hasan, Shurooq" <[shasan@gchd.us](mailto:shasan@gchd.us)>, "Childs, Bonnie"  
<[BCHILDS@gchd.us](mailto:BCHILDS@gchd.us)>, "Hallwood, Dawn" <[dhallwood@gchd.us](mailto:dhallwood@gchd.us)>, "Johnson,  
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Flint, MI 48502-1540  
Phone (810) 257-3618 Fax (810) 257-3125  
E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Monosmith, Carrie (DEQ)  
**Sent:** Thursday, March 19, 2015 8:22 AM  
**To:** Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** FW: MHA & Michigan DEQ re: McLaren-Flint Water Treatment to Prevent Legionella  
**Attachments:** MHA & Michigan DEQ re McLaren-Flint Water Treatment to Prevent Legionella .ics  
**Importance:** High

I have finally been able to set up a conference call with some of the members of the Michigan Hospital Association. However, I do believe they are more interested in what is happening in Flint rather than the regulatory aspects of secondary treatment. Unfortunately, this meeting can only be held at 3 PM this afternoon, or else it will wait at least 2 more weeks because one of their participants will be out of the country.

I worked with Janice Jones, MHA, to get this set up. I did tell her that we would try to do it today, but it may have to be cancelled because the key people here all had meeting conflicts. (It conflicts with the Region 5 PWSS State call.) I don't mind handling the call, but I don't know the current Flint situation or enough of the particulars on the Legionella outbreak there to adequately answer their questions. Liane & Richard—if you can't participate, perhaps Steve Busch and I could meet with them. Please let me know what you would like to do so that if this needs to be postponed I won't be doing it at the last minute, thanks-Carrie

## Devereaux, Tracy Jo (DEQ)

**Subject:** MHA & Michigan DEQ re: McLaren-Flint Water Treatment to Prevent Legionella  
**Location:** 1-877-668-4493/Host: 23218831/Attendee: 23235794

**Start:** Thu 3/19/2015 3:00 PM  
**End:** Thu 3/19/2015 4:00 PM

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Organizer:** Janice Jones

**Importance:** High

Thank you all for making time in your schedules to participate in this call. Ruthie, if you can be on this call that would be great, however Sam has indicated that if your schedule will not permit, we can proceed with just Laura being on the call. Please use the following conference call information:

**Dial-In Number:** 1-877-668-4493

**Host Code:** 23218831 (*Laura Wotruba, MHA*)

**Attendee Code:** 23235794 (*all others*)

I am allowing a full hour for this call, although Carrie Monosmith at Mich. DEQ has let me know it may only take 30 minutes. Thank you!

Janice Jones | Office Coordinator

Michigan Health & Hospital Association

Keystone Center for Patient Safety & Quality

517-886-8433 Phone | [jjones@mha.org](mailto:jjones@mha.org)

The MHA Keystone: Obstetrics workshop will be held April 14 at the Dearborn Inn. [Click here](#) to register or learn more.

\*\*\*\*\*  
\*\*\*\*\*

Carrie Monosmith, Drinking Water & Municipal Assistance at Michigan DEQ  
(517) 290-2601

[monosmithc@michigan.gov](mailto:monosmithc@michigan.gov)

Carrie called regarding water treatments at hospitals to prevent legionella and the regulatory ramifications that would result from such water treatments. Apparently if the facility or facilities meet the definition of a public water supply, they fall under federal regulations. Two hospitals in Flint have done such water treatments – McLaren-Flint and Hurley. In her voicemail yesterday, she mentioned McLaren in particular has undergone water treatment to prevent legionella – sounds like they may have had a few cases. Carrie has indicated that this is expected to hit the newspapers in Flint concerning the situation with McLaren and it is possible that MHA may be called.

**Devereaux, Tracy Jo (DEQ)**

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**From:** Monosmith, Carrie (DEQ)  
**Sent:** Thursday, March 19, 2015 8:59 AM  
**To:** Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: MHA & Michigan DEQ re: McLaren-Flint Water Treatment to Prevent Legionella

The call is cancelled. We are going to try and reschedule in April.—Carrie

**From:** Monosmith, Carrie (DEQ)  
**Sent:** Thursday, March 19, 2015 8:21 AM  
**To:** Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** FW: MHA & Michigan DEQ re: McLaren-Flint Water Treatment to Prevent Legionella  
**Importance:** High

I have finally been able to set up a conference call with some of the members of the Michigan Hospital Association. However, I do believe they are more interested in what is happening in Flint rather than the regulatory aspects of secondary treatment. Unfortunately, this meeting can only be held at 3 PM this afternoon, or else it will wait at least 2 more weeks because one of their participants will be out of the country.

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## **Devereaux, Tracy Jo (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, March 19, 2015 3:05 PM  
**To:** Benzie, Richard (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** FW: Information Request and Documentation

Response from Jim Henry below.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Henry, James [mailto:jhenry@gchd.us]  
**Sent:** Thursday, March 19, 2015 12:15 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Valacak, Mark; Cupal, Suzanne  
**Subject:** RE: Information Request and Documentation

Hello Mr. Busch,

Thanks for your response. I'm looking forward to working with your office moving forward. Based upon my experiences with this investigation, I think it is necessary for my communications to be candid and followed up in writing whenever possible. Our goal is to successfully conduct this investigation in efforts to better protect the public.

I agree there are ambiguities written in the FOIA request. GCHD does not have municipal water system expertise and we are continuously learning about the processes. The FOIA request is specific enough that we should have received a timely response from the City of Flint. Also, it is addressed to the City and I apologize if there were misunderstandings regarding the intended recipient.

There have not been any conclusions regarding the source of illnesses. Our team is gathering information and we suspect there may be several sources. It has been made clear that the Flint municipal water system is in compliance with the Safe Drinking Water Act. It seems reasonable that your office would be involved regardless if a potential health risk from municipal water is related to consumption, inhalation or dermal exposure. Perhaps the legislation should be revisited to better address risks.

As you mentioned, we had communications with your office in October 2014, regarding Legionella, but I also had three telephone conversations with Mr. Michael Prysby, from your office between January 21, 2015 and January 23, 2015. These conversations occurred around the same time that your office participated with the TTHM presentation in Flint. I "explicitly explained" the details of the Legionella concerns and the possible associations with the Flint municipal water system and I specifically requested to meet with your office for further discussions.

Mr. Prysby informed me that the concerns were discussed with you. I was informed there was no reason to meet because the municipal water system is in compliance with the Safe Drinking Water Act. Other than the timeframes written in your email, you are correct, I did not contact your office again until the email, dated March, 10, 2015.

GCHD has been working closely with MDCH and has consulted with CDC on several occasions regarding the epidemiological investigation. Also, we have been working with Legionella and municipal water experts, and recently with the USEPA. Based upon these discussions we have been informed that it is likely that a small amount of Legionella will survive the water treatment process at the plant and enter into the distribution system.

Our team is in the process of developing plans, which may include sampling locations within the distribution system and comparing environmental and clinical isolates. We recognize potential social, political and economic impacts regarding this investigation and need to be prepared for all outcomes. Hopefully, your office, the regulatory agency, will be available for assistance.

If a representative from your office is available to meet next week, please respond with some dates and times. I think it would be appropriate for the City to attend meetings and I will contact Mr. Croft, Flint DPW Director, after I receive a response from your office.

Thank you

Jim

Jim Henry

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



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**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]

**Sent:** Friday, March 13, 2015 3:47 PM

**To:** Henry, James

**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)

**Subject:** RE: Information Request and Documentation

Mr. Henry,

The January 27, 2015, FOIA request you provided was directed to the City of Flint, not the DEQ. The DEQ has no record of a FOIA request from your office for such information. It is our understanding that the City has responded to your FOIA request, has helped you adequately redefine your request within the City's scope of public record to address such ambiguities as "any additional areas of concern", and provided you with additional information beyond the scope of your request.

The DEQ fully recognizes the public health threat posed to individuals that contract Legionnaires' Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act. Your email below claims that you have explicitly explained the situation to our



Department. However, since contacting our office early last October to indicate a rise in cases, we have not received any further information regarding your epidemiological investigation into this matter.

Further, conclusions that legionella is coming from the public water system without the presentation of any substantiating evidence from your epidemiologic investigation appears premature and prejudice toward that end.

It is highly unlikely that legionella would be present in treated water coming from the City of Flint water treatment plant given the treatment plant's use of ozone along with complete treatment and chlorine disinfect contact time to comply with federal surface water treatment rules for potable water. Detections of total coliform or heterotrophic bacteria in the City's public water distribution system indicate an environment where bacterial growth may be supported. However, there is no direct correlation that can be made to the presence of legionella. While total organic carbon levels in potable water may serve as a food source for bacteria growth in private plumbing system, water temperatures in the City's distribution system are below legionella growth range, and chlorine residual levels would also limit such growth.

Our office agrees that water main breaks, water leaks, and system repairs are possible vectors for legionella to enter the public water system. These should be investigated as part of your epidemiology. DEQ staff can be made available to assist GCHD and the City regarding such matters, but to date no request by GCHD for any such meeting has been received, let alone declined as alleged in your email.

If GCHD is seeking assistance to complete its epidemiological investigation regarding this matter, such resource requests should be directed to the Michigan Department of Community Health. Our Office agrees that a multi-agency partnership would be beneficial to move forward and develop a unified response. In that respect, if our Office can be of any further assistance you may contact me directly.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>

**Date:** March 10, 2015 at 6:40:17 PM EDT

**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILD@GCHD.US>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>

**Subject:** Information Request and Documentation

Hello everyone,

The Genesee County Health Department has made several written and verbal requests for specific information since October, 2014, including a Freedom of Information Act Request on January 27, 2015. The information still has not been received and the city's lack of cooperation continues to prevent my office from performing our responsibilities.

The Genesee County Health Department has the responsibility to conduct illness investigations and consider all potential sources, this is not optional. In 2014, Genesee County experienced a significant increase of confirmed Legionella illnesses relative to previous years. Legionella can be a deadly, waterborne disease that typically affects the respiratory system.

The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

This situation has been explicitly explained to MDEQ and many of the city's officials. I want to make sure, in writing that there are no misunderstandings regarding this significant and urgent public health issue. The Trihalomethane issues "pale in comparison" to the potential public health risks of Legionella.

I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

## **Devereaux, Tracy Jo (DEQ)**

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**From:** Shekter-Smith, Liane (DEQ)  
**Sent:** Thursday, March 19, 2015 3:30 PM  
**To:** Sygo, Jim (DEQ); Wurfel, Brad (DEQ)  
**Cc:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** FW: Information Request and Documentation

Please see the note below.

Has there been any further communication with or from DCH?

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, March 19, 2015 3:05 PM  
**To:** Benzie, Richard (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** FW: Information Request and Documentation

Response from Jim Henry below.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
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MDEQ  
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**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]  
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Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <[jhenry@gchd.us](mailto:jhenry@gchd.us)>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)>, "Mike Prysby (DEQ)"

<prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>

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Respectfully,

Jim

Jim Henry

Jim Henry RS, MBA

Environmental Health Supervisor

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E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, March 23, 2015 6:19 PM  
**To:** Devereaux, Tracy Jo (DEQ)  
**Subject:** ASDWA Member Meeting - Summary for Minutes  
**Attachments:** ASDWA Member Meeting - Summary for Minutes.doc

Here's my summary of my talk on the ASDWA meeting at the last managers meeting.

## ASDWA Member Meeting Summary – Benzie

A review of some pertinent topics presented at the March meeting was provided to Public Water Supply Managers.

Peter Grevatt, Director of the Office of Ground Water and Drinking Water spoke about:

- the 2015 budget and how it was quite a bit below the 2014 budget
- the next Technical Support Grant contracts had been awarded to NRWA, RCAP and the Environmental Finance Centers
- the Source Water Collaborative continues to be successful and he mentioned the Charleston, WV and Toledo, OH incidents as reasons for continued vigilance in SWP
- ***EPA is committed to having a HAB health advisory available before the next HAB season on the Great Lakes, including a Health based value for microcystin.*** It may be more difficult to figure out how to implement than establishing a level - chronic vs. acute health impacts, communication, etc.
- ***Legionella is not a drinking water threat per se, but secondary treatment to mitigate these organisms makes these customers public water systems; EPA is trying to provide guidance on what treatment is effective for legionella.*** Unfortunately, the guidance is taking longer than expected due to the description of secondary treatment that requires oversight.

EPA staff in the OGWDW also spoke about:

- The status of the 2015 Needs DWIN Surveys
- WIFIA listening sessions and the concerns of states about the competition for federal dollars
- Upcoming Decontamination Tabletop Exercises for the characterization, decontamination and clearance following a chemical release (like WV).
- A new smart phone app – Info You Need To Know On The Go – a mobile app that provides one stop shopping for utility personnel looking for emergency contacts, severe weather tracker, Incident Action Checklists, Picture taking capabilities, etc., that is scheduled for a mid-March release.
- Collaboration of Source Water Protection issues, particularly with sister agencies on the establishment of TMDLs and Water Quality Standards.
- SDWIS Prime Update
- CCL, UCMR and regulatory updates, particularly the decision to regulate strontium, which apparently replaces calcium in the bones of children, and the results of UCMR3 to date, with chlorate and 1,4 – dioxane being the most prevalent detections.
- The fact that EPA is not in the process of developing a storage tank regulation

Several states spoke on several issues, including:

- Texas & California spoke on water reuse, both direct and indirect, and how it is becoming increasingly necessary in the face of droughts.
- Mississippi spoke on preparing staff to work during natural disasters that could dramatically impact their homes and places of employment



**Devereaux, Tracy Jo (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, April 07, 2015 12:10 PM  
**To:** Henry, James  
**Cc:** Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Legionella Conference Call w/ MDCH

I am out of the office on Sick Leave today.

Mike Prysby will try to call in.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Henry, James [<mailto:jhenry@gchd.us>]  
**Sent:** Tuesday, April 07, 2015 12:06 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** Legionella Conference Call w/ MDCH

Hello Mr. Busch,

If possible would you or a representative from your office please attend the conference call that is being hosted by MDCH regarding the Legionella cases in Genesee County. Your knowledge and experiences may help us better understand the Flint municipal water system and municipal water in general, relative to Legionella. I understand that this is short notice, the meeting is today at 2:30pm and the call line is below.

1-877-873-8017  
Access code: 7931338

Thank you  
Jim

Jim Henry RS, MBA  
Environmental Health Supervisor  
Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
630 S. Saginaw St., Suite 4  
Flint, MI 48502-1540  
Phone (810) 257-3618 Fax (810) 257-3125  
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**From:** Hasan, Shurooq  
**Sent:** Tuesday, April 7, 2015 10:25 AM  
**To:** Henry, James  
**Subject:** FW: Conference call line

---

**From:** Johnson, Shannon (DCH) [<mailto:JohnsonS61@michigan.gov>]  
**Sent:** Monday, April 06, 2015 8:40 AM  
**To:** Hasan, Shurooq  
**Subject:** Conference call line

Hi Shurooq,

The conference call line for tomorrow's call from 2:30-3:30pm is:

1-877-873-8017  
Access code: 7931338

Thanks,  
Shannon

Shannon Andrews Johnson, MPH  
Infectious Disease Epidemiologist  
Michigan Dept. of Community Health  
201 Townsend St., CVB 5<sup>th</sup> Floor  
Lansing, MI 48913  
Phone: 517-335-8165  
Fax: 517-335-8263

**Devereaux, Tracy Jo (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, April 07, 2015 12:47 PM  
**To:** Busch, Stephen (DEQ); Henry, James  
**Cc:** Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Legionella Conference Call w/ MDCH

I am available

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

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**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, April 07, 2015 12:10 PM  
**To:** Henry, James  
**Cc:** Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Legionella Conference Call w/ MDCH

I am out of the office on Sick Leave today.

Mike Prysby will try to call in.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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**From:** Henry, James [<mailto:jhenry@gchd.us>]  
**Sent:** Tuesday, April 07, 2015 12:06 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** Legionella Conference Call w/ MDCH

Hello Mr. Busch,

If possible would you or a representative from your office please attend the conference call that is being hosted by MDCH regarding the Legionella cases in Genesee County. Your knowledge and experiences may help us better understand the Flint municipal water system and municipal water in general, relative to Legionella. I understand that this is short notice, the meeting is today at 2:30pm and the call line is below.

1-877-873-8017  
Access code: 7931338

Thank you  
Jim

Jim Henry RS, MBA  
Environmental Health Supervisor  
Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
630 S. Saginaw St., Suite 4  
Flint, MI 48502-1540  
Phone (810) 257-3618 Fax (810) 257-3125  
E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



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For a copy of the Health Department's Notice of Information Practices, contact the Health Department or visit the Health Department's website at <http://www.gchd.us/>

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**From:** Hasan, Shurooq  
**Sent:** Tuesday, April 7, 2015 10:25 AM  
**To:** Henry, James  
**Subject:** FW: Conference call line

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**From:** Johnson, Shannon (DCH) [<mailto:JohnsonS61@michigan.gov>]  
**Sent:** Monday, April 06, 2015 8:40 AM  
**To:** Hasan, Shurooq  
**Subject:** Conference call line

Hi Shurooq,

The conference call line for tomorrow's call from 2:30-3:30pm is:

1-877-873-8017  
Access code: 7931338

Thanks,  
Shannon

Shannon Andrews Johnson, MPH  
Infectious Disease Epidemiologist  
Michigan Dept. of Community Health

201 Townsend St., CVB 5<sup>th</sup> Floor  
Lansing, MI 48913  
Phone: 517-335-8165  
Fax: 517-335-8263

## **Devereaux, Tracy Jo (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, April 21, 2015 5:02 PM  
**To:** Anderson, Madhu (DEQ)  
**Cc:** Copen, Leigh (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: Potential issues

Director Lyons is aware of the potential legionella issue in Genesee County. He may not know that the investigation has not yet been completed or that a source has not yet been identified. DCH (Corinee Miller and her staff) and DEQ staff have been in contact.

Recently, our Environmental Health Section asked for assistance with an arsenic brochure that we were updating. DCH staff (Lynda Dykema, Kory Groetsch, Jen Gray and Lisa Quiggle) helped us edit this document and get it ready for distribution.

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-284-6543

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**From:** Anderson, Madhu (DEQ)  
**Sent:** Tuesday, April 21, 2015 4:15 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Copen, Leigh (DEQ)  
**Subject:** Potential Issues

Liane – I know this is short notice... but the Director and I are visiting with Nick Lyons tomorrow. Are there any specific issues that you think we should raise with him tomorrow as ones to be on the lookout for? Flint, septic proposals, etc. come to mind...

Thanks,



Madhu R. Anderson  
Deputy Director, Economic and Strategic Initiatives  
517 284 6702 or 517 290 9653



## **Devereaux, Tracy Jo (DEQ)**

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**From:** Maul, Sue (DEQ)  
**Sent:** Wednesday, April 22, 2015 8:22 AM  
**To:** DeBruyn, Dana (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: 2015 April

No, your summary is good.

---

**From:** DeBruyn, Dana (DEQ)  
**Sent:** Tuesday, April 21, 2015 4:02 PM  
**To:** Devereaux, Tracy Jo (DEQ)  
**Cc:** Maul, Sue (DEQ)  
**Subject:** 2015 April

Tracy,  
These were my draft notes from both the AM and the PM meeting. Can you clean these up? Also, I forgot to take minutes during Sue's talk on enforcement. Sue, do you want to add anything?

### **2015 April**

Tuesday, April 21, 2015  
9:02 AM

ODWMA Management Team Meeting Agenda  
April 21, 2015 – McCauley Conference Room

1. Employee Engagement/Leadership Discussion  
Coursera classes (<http://www.coursera.org>) (Amy Lachance)

#### **2. SMT/Office News**

Well Construction/Pump Training- everybody is included that wants to attend this intense training on pumps, etc. Will Be Tuesday July 14 all day at LCC West.

In-Service Training- also will be at the LCC West. Needs modification of draft agenda. Program Slots will be scheduled for "interesting" stuff, not just talking about the rules.

☐ Liane needs to send out latest draft agenda

#### **3. Personnel Issues**

- IT Roles/Responsibilities for ODWMA vs. Section vs. DEQ (Carrie Monosmith)  
Ronda's roll is not as a "help desk".

☐ Tracy Jo should be a ODWMA sharepoint publisher (to help with Forms, P&P)  
Policies and procedures, forms always go through Kate

☆ Training needed on sharepoint 101 (Intranet) and much deeper (workflow). KG

- Availability of Phone Use During Emergency Situations

Discussion about 800 megahertz training. After ER meeting in May, then assess what we need for Emergency response.

- Succession Planning (Richard Benzie) -

✓ EQS (Philip Vacancy)-discussion

- ✓ Operator Certification Program – Paul Brun Del Re Retirement – Nov 2015; Open up to other people internally, job shadowing, Paul's position (EQA 9-12) through fall exams.
- ✓ Others
- ✓ LCR/CCR Specialist Update
  - ✿ This process of moving forward with these specialist positions needs to be coordinated and clearly communicated, so staff know what opportunities are available.

#### 4. Training

- Coursera classes (<http://www.coursera.org>) (Amy Lachance)
- Michigan Environmental Health Association Annual Education Conference (Dana DeBruyn)
- LYNC Demonstration Scheduling (Ronda Page – 10:00 a.m.)

If you don't have LYNC 2013, call the help desk.

LYNC is a replacement for office view

May take several days to start working

What does it show when you lock your computer?

This is FOIAable.

This reviewed main features of LYNC, like creating LYNC meeting

These photos are the same as outlook. Remember DEQ policy on photos.

- ☐ Ronda will send quick reference guide thru Kate-which is now merged with Liane's email regarding calendars.
- ☒ Dana- Written instructions on time off will be sent to managers (conversation side bar)
  - <<How To Request Time Off in Outlook.doc>> attached
- ☐ Will ODWMA going to require LYNC of Staff at some minimal level? Discussion. Liane: Get it on all the computers and training will be offered.

#### 5. Administration Issues

- Constitution Hall Validations for the Ellis Lot (Kathy Tetzlaff) KG, BF, TR, KT, will send out an email. Programs will still get charged. Hand it to person at the gate.
- Office Calendars (Kathy Tetzlaff) Have your calendar open-subject, locations and times. Admin needs to see "upfront details". Instructions have been put together. This is the "default" setting. Please let us know if you see others are "busy".

☐ It was recommended that Liane send the notice and instructions.

- Taxable Travel (Kathy Tetzlaff)-see handout. Mostly applies to DS that have more than 1 workstations.
- Personnel Update (Kathy Tetzlaff) James will be starting next payday. An updated duties list will be sent.
- OEA Water Conservation -10 Billion Gallon Challenge Representative (Dana DeBruyn) The contact is Devan Dodge. Will need to encompass the water Strategy, Water Use Advisory council Recommendations, etc.

☒ Dana To send Liane the email to solicit a volunteer.

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Liane-

Part 127 fresh start meeting with MGWA

VCL geothermal-starting to move forward

Went to Kalamazoo for AWWA spring regional meeting.

Flint update

SMT update included-District visits-different formats; updating telecommunication policy (and working at home policy); DTMB workgroup;

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- Detroit may be the only project that comes in for RL;
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- UCMR3 Richard has results of systems using EPA \$\$\$/less than 10,000 served. The results belong in the chemical monitoring files at the district.
  - ☐ Richard will give to Tracy Jo to send results out to district offices.
- Legionella was discussed.
  - ☐ A multi-agency group should be formed, for outreach, etc. Should Liane lead this?

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All called ACOs and not DACOs.

All need to be tracked.

All come through Lansing and come back to Lansing

We don't have a procedure for things other than Significant Deficiency (WRD one)

Sue and Richard need to review (send at the same time is OK). Liane does not need to see them before they go out.

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##### 4. Emergency Response Topics (Amy Lachance)

- St. Clair County Tabletop Exercise – May 21, 2015 DEQ has a few slots
- EPA's Water Utility Response On-the-Go mobile Web site-somehow tied into incident command.  
(<http://watersgeo.epa.gov/responseotg/>)
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- ICS Training Logistics. State Police talking about offering 300 and 400 level for supplies.

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##### 7. EDM File Plan (Steve Busch) handouts provided. Would Lead/Copper go to near the top of the list?

##### 8. Amy-Concerns with "cost optimization" firms coming into PWS-discussion.

Next meeting scheduled for May 13, 2015: Goodies – (Richard Benzie)

Created with Microsoft OneNote 2010  
One place for all your notes and information

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Devereaux, Tracy Jo (DEQ)  
**Sent:** Wednesday, April 22, 2015 1:49 PM  
**To:** DEQ-ODWMA-Supervisors-All  
**Subject:** Draft Meeting Minutes - April ODWMA Manager Meeting  
**Attachments:** ODWMA Management April 2015 Meeting Minutes -draft.docx; How To Request Time Off in Outlook.doc

Attached you will find the draft meeting minutes from the ODWMA management meeting, including a referenced attachment. Please respond with any suggested changes by c.o.b. Friday, April 24, 2015. I will send out the final minutes sometime next week. If you have any edits to the attendee portion (since I wasn't there) – please forward those as well, thanks.

Thanks,

*Tracy Jo*

Tracy Jo Devereaux, Management Assistant to  
Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
Constitution Hall, 4th Floor, South Tower, Pillar P8  
525 W. Allegan Street  
Lansing, Michigan 48933  
☎517-284-6544  
✉[devereauxt@michigan.gov](mailto:devereauxt@michigan.gov)

# ODWMA Management Team Meeting

## April 21, 2015

### Minutes

In Attendance: Richard Benzie, Jon Bloemker, Steve Busch, Sonya Butler, Kris Donaldson, Dana DeBruyn (scribe), Wendy Fitzner, Kirsten Gasper (treats), Jeremy Hoeh, Amy Lachance, Bob London, Carrie Monosmith, Kris Philip, Liane Shekter Smith, Kathy Tetzlaff, Chuck Thomas.

#### 1. Employee Engagement/Leadership Discussion

- Coursera classes (<http://www.coursera.org>) (Amy Lachance)

#### 2. SMT/Office News

- Well Construction/Pump Training- everybody is included that wants to attend this intense training on pumps, etc. Will be Tuesday July 14 all day at LCC West.
- In-Service Training- also will be at the LCC West. Needs modification of draft agenda. Program Slots will be scheduled for "interesting" stuff, not just talking about the rules. Liane needs to send out latest draft agenda

#### 3. Personnel Issues

- IT Roles/Responsibilities for ODWMA vs. Section vs. DEQ (Carrie Monosmith) Ronda's role is not as a "help desk." Tracy Jo should be an ODWMA SharePoint Publisher (to help with Forms, Policies and Procedures, etc. in conjunction with Kate Jannereth, Forms Liaison)
- Training needed on SharePoint 101 (Intranet) and much deeper (workflow).
- KG Training
- Availability of Phone Use During Emergency Situations  
Discussion about 800 megahertz training. After ER meeting in May, then assess what we need for Emergency response.
- Succession Planning (Richard Benzie) -
  - ✓ EQS (Philip Vacancy)-discussion
  - ✓ Operator Certification Program – Paul Brun Del Re Retirement – Nov 2015; Open up to other people internally, job shadowing, Paul's position (EQA 9-12) through fall exams.
  - ✓ Others
  - ✓ LCR/CCR Specialist Update

This process of moving forward with these specialist positions needs to be coordinated and clearly communicated, so staff know what opportunities are available.

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DRAFT

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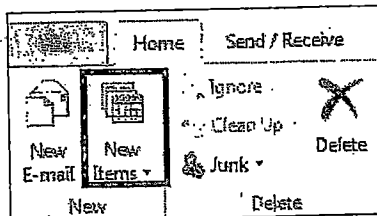
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  6. Paragon Lab Investigation (Steve Busch) Handouts were provided regarding TOC.
  7. EDM File Plan (Steve Busch) handouts provided. Would Lead/Copper go to near the top of the list?
  8. Amy-Concerns with "cost optimization" firms coming into PWS-discussion.

DRAFT

## How to request time off using the Outlook calendar

1. Open Outlook.
2. Click the **New Items** button on the **New** section of the **Home** tab.
- 3.



4. Select **Meeting**.
5. In the **To** field, type in the name of the Supervisor from whom you'd like to request time off, last name first.
6. In the subject line, type 'Your Name: number of hours and type of leave requested'. (For example: **Tommy Sample: 8 hrs A/L**.
  - o If you are requesting a partial day, enter the time of day. For example: Tommy Sample: A/L 2:30 – 4:30.
7. Check the **All day event** box, even if it isn't an all day event.
8. Choose the date the time off will occur.
  - o You can utilize the **Recurrence** function to schedule multiple days off.
9. Change **Show As** to **Free**. This is very important, otherwise you will be blocking off your supervisor's calendar for the entire day.
10. Change **Reminder** to **None**.
11. Any further comments can be entered into the message body.
12. If you'd like the appointment to be hidden from anyone besides yourself and your manager, click the **lock icon** in the **Tags** section
13. Click the **Send** button.
14. Create an appointment on your own calendar to block the time off as unavailable.

Here is a sample request:

Tommy Sample: 8 hrs A/L - Invited Event

Invited Event   Insert   Format Text   Review   Add-Ins

Calendar   Appointment   Scheduling Assistant   Cancel Invitation   Response Options   Address Book   Check Names   Show As: Free   Recurrence   Time Zones   Room Finder   Categorize   Tags   Zoom

Delete   Forward   OneNote   Show   Attendees   Options

Invitations have not been sent for this meeting.

To: Manager, Sample

Subject: Tommy Sample: 8 hrs A/L

Location: Rooms...

Start time: Thu 6/7/2012 12:00 A/L   All day event

End time: Thu 6/7/2012 12:00 A/L

Room Finder

June, 2012

Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	1	2	3
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

Good   Fair   Poor

Choose an available room:

None

## **Devereaux, Tracy Jo (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, April 24, 2015 3:02 PM  
**To:** Monosmith, Carrie (DEQ); Butler, Sonya (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: April 28-29 R5 PWSS Directors' meeting final agenda  
**Attachments:** R5 PWSS Directors April 28 and 29 2015 FINAL agenda.docx

FYI -

---

**From:** Kuefler, Janet [<mailto:kuefler.janet@epa.gov>]  
**Sent:** Friday, April 24, 2015 1:45 PM  
**To:** Henry, Timothy; Lopez-Carbo, Maria; Bielanski, Andrew; DAnglada, Lesley; [Mary.Vollbrecht@wisconsin.gov](mailto:Mary.Vollbrecht@wisconsin.gov); Davenport, Thomas; Wortman, Santana; Cordero, Cesar; Rezania, Lih-in W. (MDH); Shanks, Orin; Long, Sharon C; [brandon.moss@wisc.edu](mailto:brandon.moss@wisc.edu); [jeremy.olstadt@wisc.edu](mailto:jeremy.olstadt@wisc.edu); Darnell, LuAnn; R5 WD GWDW; Al Lao; Benzie, Richard (DEQ); [Beth.Messer@epa.state.oh.us](mailto:Beth.Messer@epa.state.oh.us); [cathrine.wunderlich@wisconsin.gov](mailto:cathrine.wunderlich@wisconsin.gov); [Dave.McMillan@illinois.gov](mailto:Dave.McMillan@illinois.gov); DeBruyn, Dana (DEQ); [jill.jonas@wisconsin.gov](mailto:jill.jonas@wisconsin.gov); [mike.baker@epa.state.oh.us](mailto:mike.baker@epa.state.oh.us); Monosmith, Carrie (DEQ); [pcarroll@idem.in.gov](mailto:pcarroll@idem.in.gov); [randy.ellingboe@state.mn.us](mailto:randy.ellingboe@state.mn.us); [rick.cobb@illinois.gov](mailto:rick.cobb@illinois.gov); [Robert.Smude@state.mn.us](mailto:Robert.Smude@state.mn.us); Shekter Smith, Liane (DEQ); Steve Elmore  
**Cc:** Lausted, Andrew; Cossa, Laura; Bakker, Gerry; Marquardt, Steve; Hyde, Tinka; Whittier, Nick  
**Subject:** April 28-29 R5 PWSS Directors' meeting final agenda

Good afternoon!

We are looking forward to our meeting next week and your participation either in person or via webinar.

Please feel free to share this agenda with your staff who might wish to participate remotely via adobe connect webinar. The webinar link, and audio dial-in telephone number are the same for both days, and are included on the agenda. The conference room that we are using has ceiling microphones which provide good audio quality of group discussions for those participating by telephone.

I hope that those of you who will be here in Chicago have safe travels and will join us Tuesday evening for a group dinner at the Bridge House Tavern.

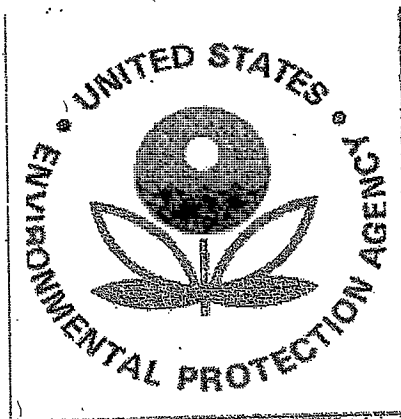
Please contact me if you have any questions and enjoy your weekend!

Janet Kuefler  
Ground Water and Drinking Water Branch  
State Programs Team Leader

United States Environmental Protection Agency, Region 5  
77 West Jackson Blvd. (WG-15J)  
Chicago, Illinois 60604

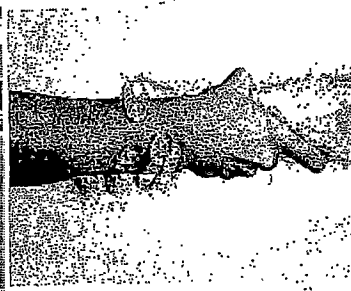
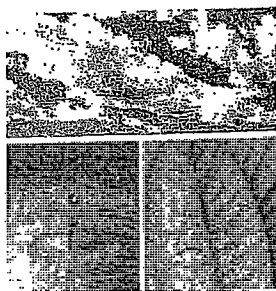
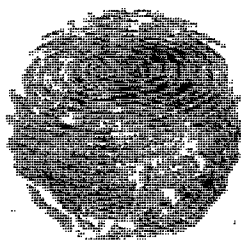
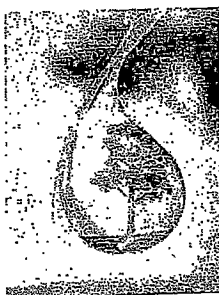
(312) 886-0123  
[kuefler.janet@epa.gov](mailto:kuefler.janet@epa.gov)

# Region 5 PWSS State Directors' Meeting



Tuesday, April 28 and  
Wednesday, April 29, 2015

USEPA R5 Office  
77 W. Jackson Blvd, Chicago  
12th Floor Conference Center  
Lake Michigan Room



## R5 PWSS Directors' Meeting Agenda

### **Tuesday, April 28, 2015, Lake Michigan Room**

Conference call line 1-877-226-9607, code 529-569-0482#

Adobe Connect webinar link: <https://epa.connectsolutions.com/r5pwss2015/>

(click "enter as a guest"; dial-in to conference line, above, for audio)

8:00 am CT	<b>Early Bird Special:</b> Coffee, Juice, Bagels, Cream Cheese and Networking	All
8:30 am CT	<b>Setting the Stage for the Day</b> <ul style="list-style-type: none"> <li>Welcome, Logistics, Introductions</li> <li>Opening remarks with discussion on Clean Water Act / Safe Drinking Water Act integration</li> </ul>	Tom Poy, R5 GWDWB Tim Henry, R5 Water Division Rita Bair, R5 Cary McElhinney, R5 Wendy Drake, R5 PWSS State Directors
9:15 am CT	<b>USEPA Headquarters' Perspectives</b>  <i>Objective: States will receive updated information and responses to questions on office priorities, budget outlook, SDWIS-Prime, nutrients, harmful algal blooms, CWA/SDWA integration, revised total coliform rule, and other current topics</i>	Maria Lopez-Carbo, USEPA HQ's Office of Ground Water and Drinking Water (via webinar)
10:00 am CT	<b>Break</b>	
10:15 am CT	<b>States Round Robin</b> (15 minutes per state): WI, IL, IN, MI, MN, OH <ul style="list-style-type: none"> <li>Issues, changes, areas of focus</li> </ul> <i>Objective: Understand the status and challenges of State programs, share resources and insights, provide a foundation for future discussions of State priorities and R5 oversight priorities.</i>	PWSS State Directors
11:45 am CT	<b>Lunch on Your Own</b>	
1:00 pm CT	<b>Program Implementation: Focus on Integration</b> <ul style="list-style-type: none"> <li>DWSRF grants, including Q&amp;A (10 minutes)</li> <li>IEPA update on DWSRF set-aside use for water loss (10 minutes)</li> <li>WDNR update on DWSRF set-aside use for nutrients (20 minutes)</li> <li>Regulating aboveground storage tanks in Source Water Protection areas</li> </ul>	Andy Bielanski, R5 Dave McMillan, IEPA Mel Vollbrecht, WDNR (via webinar) Pat Carroll, IDEM

**Tuesday, April 28, 2015, Lake Michigan Room**

Conference call line 1-877-226-9607, code 529-569-0482#

Adobe Connect webinar link: <https://epa.connectsolutions.com/r5pwss2015/>

(click "enter as a guest"; dial-in to conference line, above, for audio)

	(IDEM and Ohio EPA) (20 minutes)	Beth Messer, Ohio EPA
2:00 pm CT	<p><b>Nutrients</b></p> <ul style="list-style-type: none"> <li>Algal toxin health advisories</li> <li>Update on Annex 4—Nutrients of the Great Lakes Water Quality Agreement</li> </ul>	<p>Lesley V. D'Anglada, DrPH, USEPA's Office of Science and Technology, Office of Water (<i>via webinar</i>)</p> <p>Tom Davenport, R5 Agriculture Coordinator Santina Wortman, R5</p>
2:45 pm CT	<b>Break</b>	
3:00 pm CT	<p><b><i>Legionella</i> Control</b></p> <ul style="list-style-type: none"> <li>Overview of EPA technical document expected for publication in very near future, "<i>Legionella</i>: current knowledge of treatment technologies"</li> <li>Other work going on with <i>Legionella</i></li> </ul>	<p>Cesar Cordero, USEPA HQ (<i>via webinar</i>)</p> <p>Beth Messer, Ohio EPA</p> <p>Jerry Smith, MDH (<i>via webinar</i>)</p>
4:00 pm CT	<p><b>Lab Certification</b></p> <ul style="list-style-type: none"> <li>Modifications to Region 5's Certification Program – Parameter List</li> <li>Region 5's Synthetic Organic Chemicals (SOC) Trigger Memo</li> </ul>	<p>Rita Blair, R5 PWSS State Directors</p>
4:30 pm CT	<b>Adjourn</b>	
5:30 pm CT	<p><b>Group Dinner:</b> Bridge House Tavern, 321 N Clark Street, (312) 644-0283</p> <p>Meet in Club Quarters Hotel Lobby (111 W. Adams) at 5:30 pm to walk over to restaurant. We have reservations at 6:00 pm. <a href="http://www.bridgehousetavern.com/">http://www.bridgehousetavern.com/</a></p>	All are welcome!



**Tuesday, April 28, 2015, Lake Michigan Room**

Conference call line 1-877-226-9607, code 529-569-0482#

Adobe Connect webinar link: <https://epa.connectsolutions.com/r5pwss2015/>

(click "enter as a guest", dial-in to conference line, above, for audio)

### **Wednesday, April 29, 2015, Lake Michigan Room**

Conference call line 1-877-226-9607; code 529-569-0482#

Adobe Connect webinar link: <https://epa.connectsolutions.com/r5pwss2015/>  
(click "enter as a guest"; dial-in to conference line, above, for audio)

7:45 am CT	<b>Early Bird Special:</b> Coffee, Juice, Bagels, Cream Cheese, and Networking	All
8:00 am CT	<b>MDH Virus Study</b>  The study examines the occurrence, fate, and transport of viruses in groundwater sources in MN. Future work, if funded, will estimate risk of acute gastrointestinal illness from consuming non-disinfected drinking water from groundwater sources.	Lih-in Rezanian, MDH <i>(via webinar)</i>  Randy Ellingboe, MDH
8:45 am CT	<b>Microbial Source Tracking (MST)</b> <ul style="list-style-type: none"> <li>• Introduction to microbial source tracking, the state of the science, and current ORD research activities (40 minutes, plus Q&amp;A)</li> <li>• Use of MST for assessing well contamination in Wisconsin (40 minutes, plus Q&amp;A)</li> </ul>	Orin C. Shanks, USEPA's Office of Research and Development  Sharon C. Long, Brandon D. Moss, & Jeremy Olstadt, Wisconsin State Lab of Hygiene
10:30 am CT	<b>Break</b>	
10:45 am CT	<b>Round Robin of State RTCR Implementation Plans</b>	Miguel Del Toral, R5  PWSS State Directors
11:45 am CT	Please purchase lunch and bring back to conference room.	
12:15 pm CT	<b>Working Brown Bag Lunch: SDWIS-Prime Transition</b>  Discuss expected transition work, what other States have done, and Q&As.	LA Darnell, USEPA HQ on detail to R5
1:15 pm CT	<b>Next Steps</b>  Review follow-up items, discuss date for next year's annual meeting, recommended changes to meeting format, etc.	Tom Poy, R5
1:30 pm CT	<b>End of meeting</b>	Tom Poy, R5

**Devereaux, Tracy Jo (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, May 13, 2015 6:58 PM  
**To:** Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Lachance, Amy (DEQ); Thomas, Chuck (DEQ)  
**Cc:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ); Monosmith, Carrie (DEQ); Cook, Pat (DEQ); Philip, Kris (DEQ)  
**Subject:** FW: Hospital Communication  
**Attachments:** Water Safety Plan/HACCP Information; Water Safety Plan/HACCP Information

Here are the two separate emails that Steve sent to the hospitals in Flint that Mike and he visited recently to discuss premise plumbing issues.

Each of the emails has the 3 attachments that were mentioned in the managers meeting today.

The email messages outline an approach we should all follow for now when dealing with these facilities on this issue.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, May 05, 2015 3:10 PM  
**To:** Monosmith, Carrie (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** Hospital Communication

For your reference, attached are the emails I sent as follow up to meeting with each of the hospitals.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

## Devereaux, Tracy Jo (DEQ)

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, May 01, 2015 3:00 PM  
**To:** russell.hudson@mclaren.org  
**Cc:** raelynn.hicks@mclaren.org; danete.hayman@mclaren.org; henry.lobb@mclaren.org; jason.white@mclaren.org  
**Subject:** Water Safety Plan/HACCP Information  
**Attachments:** EPA Small Systems Webinar Series\_April 28\_2015.pdf; WHO-LegionellaAndPreventionOfLegionellosis-2007.pdf; VHA Directive 1061 - Prevention of Healthcare associated Legionella 8-2....pdf; WHO-WaterSafetyInBuildings-2011.pdf

Rusty,

Thanks again for arranging the meeting with me earlier this week. As discussed during the meeting, use of your continuous chlorine disinfectant chemical feed system constitutes a public water system triggering requirements under the safe drinking water act, and I will be following up in the near future with more information regarding those requirements. As a reminder our office would need to permit any new treatment equipment prior to installation and use.

Today, I am providing additional information regarding Water Safety Plans and Hazard Analysis Critical Control Points (HACCP) system for your information/use.

Attached are two documents from the World Health Organization regarding Legionella and the development of water safety plans. Both have information specific to health care facilities. Also attached is the latest VHA directive to their facilities regarding protocols for the prevention of legionella. And the last attachment is from an EPA webinar earlier this week regarding Healthcare water systems. The later portion of this document contains information regarding various treatment systems, including chlorine dioxide which you indicated is currently under consideration. -

The video linked below reviews the HACCP/Water Safety Plan process steps. (*Best Practices in Preventing Disease From Waterborne Pathogens in Healthcare Water Systems*):

<https://youtu.be/LHqU2YSaagQ>

The basic Implementation Protocol is as follows:

1. Establish an HACCP team (responsible and accountable)
2. Describe the water system(s)
3. Develop the process flow diagrams
4. Confirm process flow diagrams with onsite audits
5. Perform systematic hazard analysis and risk characterization
6. Determine critical control points
7. Establish critical control limits (quantitative parameters)
8. Monitoring Methods and Frequencies
9. Develop Corrective Actions
10. Verification of HACCP implementation
11. Verification of hazard control
12. Documentation, communication, and recordkeeping

From our meeting it appears that you have already accomplished most of steps 1-4 of the protocol, but may want to consider refining protocol steps 5-12 of your existing plan. The attached documents from WHO should help to guide you through this process.

Al Kubly, Section Head of Facilities Operations, Mayo Clinic, would be an excellent contact on how to develop your water safety plan/HACCP. He chairs their Water Management Team that is implementing the Mayo Clinic's Potable Water Quality Program, which he spoke about at a recent conference. The Clinic phone number in Rochester, MN is 507-284-2511.

I will be in touch regarding public water system requirements and your existing treatment equipment, but in the meantime please let me know if you are in need of any further assistance or have any questions regarding these matters.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, May 01, 2015 2:38 PM  
**To:** Ann Newell (AnnNewell@hurleymc.com)  
**Subject:** Water Safety Plan/HACCP Information  
**Attachments:** WHO-LegionellaAndPreventionOfLegionellosis-2007.pdf; WHO-WaterSafetyInBuildings-2011.pdf; EPA Small Systems Webinar Series\_April 28\_2015.pdf; VHA Directive 1061 - Prevention of Healthcare associated Legionella 8-2-2014.pdf

Ann,

As promised I am providing additional information regarding Water Safety Plans and Hazard Analysis Critical Control Points (HACCP) system.

Attached are two documents from the World Health Organization regarding Legionella and the development of water safety plans. Both have information specific to health care facilities. Also attached is the latest VHA directive to their facilities regarding protocols for the prevention of legionella. And the last attachment is from an EPA webinar earlier this week regarding Healthcare water systems. The later portion of this document contains information regarding various treatment systems.

The video linked below reviews the HACCP/Water Safety Plan process steps. (*Best Practices in Preventing Disease From Waterborne Pathogens in Healthcare Water Systems*):  
<https://youtu.be/LHqU2YSaag0>

The basic Implementation Protocol is as follows:

1. Establish an HACCP team (responsible and accountable)
2. Describe the water system(s)
3. Develop the process flow diagrams
4. Confirm process flow diagrams with onsite audits
5. Perform systematic hazard analysis and risk characterization
6. Determine critical control points
7. Establish critical control limits (quantitative parameters)
8. Monitoring Methods and Frequencies
9. Develop Corrective Actions
10. Verification of HACCP implementation
11. Verification of hazard control
12. Documentation, communication, and recordkeeping

Al Kubly, Section Head of Facilities Operations, Mayo Clinic, would be an excellent contact on how to develop your water safety plan/HACCP. He chairs their Water Management Team that is implementing the Mayo Clinic's Potable Water Quality Program, which he spoke about at a recent conference. The Clinic phone number in Rochester, MN is 507-284-2511.

As noted in the EPA presentation and as we have previously discussed, should your facility decide to install water treatment equipment, it may constitute a public water system triggering requirements under the safe drinking water act. Our office would need to permit any such treatment equipment prior to installation and use.

Please let me know if you are in need of any further assistance or have any questions regarding these matters.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

## **Devereaux, Tracy Jo (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, May 14, 2015 10:21 AM  
**To:** Benzie, Richard (DEQ); Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Lachance, Amy (DEQ); Thomas, Chuck (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ); Monosmith, Carrie (DEQ); Cook, Pat (DEQ); Philip, Kris (DEQ)  
**Subject:** RE: Hospital Communication  
**Attachments:** RE: Premise plumbing; Premise plumbing

Attached is some additional information regarding what plumbing appurtenances, fixtures, appliances, etc. would pose potential risk for harboring legionella.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, May 13, 2015 6:59 PM  
**To:** Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Lachance, Amy (DEQ); Thomas, Chuck (DEQ)  
**Cc:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ); Monosmith, Carrie (DEQ); Cook, Pat (DEQ); Philip, Kris (DEQ)  
**Subject:** FW: Hospital Communication

Here are the two separate emails that Steve sent to the hospitals in Flint that Mike and he visited recently to discuss premise plumbing issues.

Each of the emails has the 3 attachments that were mentioned in the managers meeting today.

The email messages outline an approach we should all follow for now when dealing with these facilities on this issue.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, May 05, 2015 3:10 PM  
**To:** Monosmith, Carrie (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** Hospital Communication

For your reference, attached are the emails I sent as follow up to meeting with each of the hospitals.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314



**Devereaux, Tracy Jo (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, May 01, 2015 12:17 PM  
**To:** Prysby, Mike (DEQ); gthomas@cityofflint.com  
**Subject:** RE: Premise plumbing  
**Attachments:** Final Genesee supplemental questionnaire 2-23-15.docx

Glen,

The attached questionnaire that would be utilized by the Local Health Department and Department of Health and Human Services provides additional detail of what to be on the lookout for (See Questions 12 and 13). As we indicated almost every service connection could potentially have some element associated with what is listed in this questionnaire, but we are just looking for a rough list of those with more non-typical appurtenances such as spas, grocery stores with spray/mist system, garden/nurseries with mist irrigation, etc., and those that Mike provided. Thanks.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, May 01, 2015 9:56 AM  
**To:** [gthomas@cityofflint.com](mailto:gthomas@cityofflint.com)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** Premise plumbing

Glen,

Based upon our discussion during our April 29<sup>th</sup>, 2015 site visit, approximately 40-45 commercial/industrial customers were identified as a potential candidate for needing a premise plumbing Water Safety Plan (WSP). Attached is a list of mechanical components within building premise plumbing to assist you in confirming this and/or identifying additional customers that could serve as WSP candidates. Please send us your completed list at your earliest convenience. Thanks.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, May 01, 2015 9:56 AM  
**To:** gthomas@cityofflint.com  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** Premise plumbing  
**Attachments:** Premise Plumbing.doc

Glen,

Based upon our discussion during our April 29<sup>th</sup>, 2015 site visit, approximately 40-45 commercial/industrial customers were identified as a potential candidate for needing a premise plumbing Water Safety Plan (WSP). Attached is a list of mechanical components within building premise plumbing to assist you in confirming this and/or identifying additional customers that could serve as WSP candidates. Please send us your completed list at your earliest convenience. Thanks.

Michael Prysby, P.E.  
District Engineer  
Office of Drinking Water and Municipal Assistance  
517 290-8817

## **Devereaux, Tracy Jo (DEQ)**

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**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, May 28, 2015 12:15 PM  
**To:** Howes, Sarah (DEQ)  
**Cc:** Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Potter, Jodi (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ); Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Potter, Jodi (DEQ); Pallone, Maggie (DEQ)  
**Subject:** RE: Communications between City of Flint and DEQ  
**Attachments:** Flint-2015-02-13-AnnualMonSched.pdf; Flint-2015-03-05-TTHM-VN-15-1.pdf; Flint-2015-03-30-PbCu90.pdf; Flint-2015-04-03-LT2ESWTR.pdf; Flint-2015-04-03-Permit151018.pdf; Flint-2015-05-06-CCR-reminder.pdf; Flint-2015-05-11-CCCP.pdf; S2 Grant Project No 9204.01.City of Flint.pdf; RE: Premise plumbing; Water Quality Optimization Strategy; call; Flint MORs; Flint River Source Water Assessment; FW: PEAS call; FW: Schematics for LT2 sampling plans; FW: Water Supply Sources; Premise plumbing; RE: City of Flint - March Bromate Results; RE: City of Flint March 2015 MOR; RE: City Water Tech Team; RE: HC Letter & FAQ's; RE: May Technical Advisory Meeting; RE: PEAS call; RE: RE: Flint Water Age map; RE: TTHM Draft Letter; RE: Water Supply Sources; Residential customers; Watermain breaks; distribution WQPs; January '15 MOR; Lead Copper Cert form; RE: City of Flint Water Plant Monitoring Results; RE: distribution WQPs; RE: distribution WQPs; RE: January '15 MOR

Sarah,

Per the request from Representative Neely, attached are communications from the DEQ Office of Drinking Water and Municipal Assistance (ODWMA) to the City of Flint dating back to February 2015.

This includes:

- 1 construction permit
- 7 letters
- 7 emails from Adam, Rosenthal, Environmental Quality Analyst
- 18 emails from Mike Prysby, District Engineer
- 2 emails from Steve Busch, District Supervisor

Please let us know if we can provide any further assistance in addressing Representative Neely's request or if they have any questions or issues we could help answer.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, May 26, 2015 1:59 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Howes, Sarah (DEQ); Shaler, Karen (DEQ); Potter, Jodi (DEQ)  
**Subject:** FW: Communications between City of Flint and DEQ  
**Importance:** High

Note the deadline of COB Thursday to Sarah.

---

**From:** Pallone, Maggie (DEQ)  
**Sent:** Tuesday, May 26, 2015 1:21 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Howes, Sarah (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); DEQ-Legislative-Contact; Potter, Jodi (DEQ)  
**Subject:** Communications between City of Flint and DEQ

Liane,  
Rep Neely has requested any communications that DEQ has had with City of Flint between February 2015 and today. Could you please pull that information together and get it to Sarah by COB on Thursday? She will then forward it the Representative's office.

Please let me know if you need any additional details.

Thanks,  
Maggie

**Maggie Pallone**  
Director of Legislative Affairs  
Department of Environmental Quality  
517-599-6190 (cell)  
[PalloneM@michigan.gov](mailto:PalloneM@michigan.gov)

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, July 31, 2015 8:03 PM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** Flint communications  
**Attachments:** Flint messages 2015.xlsx

Here is a list of the messages I have that involve communication about Flint during the first half of 2015. Most of the messages I received were internal but there are some that included communication with Flint representatives. However, I am simply receiving a copy and one or both of you are also involved in those communications.

The ones that are from me are all internal and not to or with Flint.

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Tuesday, September 08, 2015 6:19 PM  
**To:** Shekter Smith, Liane (DEQ); Thomas, Chuck (DEQ); Bolf, Michael (DEQ); Cook, Pat (DEQ); Philip, Kris (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** DEQ Update 2015 for Fall ACE.pptx  
**Attachments:** DEQ Update 2015 for Fall ACE.pptx

Here's my first full draft of the DEQ Update for the ACE in the Soo. It is too long. Let me know what you think and what you think we should or could eliminate. I covered the RTCR, a few proposed state rule changes included with the RTCR, the upcoming January 1, 2016 deadlines for state rules modified in 2009 (particularly the Reliability Studies and General Plan requirements), marketing the DWRF, and Secondary Treatment issues.

While there are too many slides, there are quite a few that are very fast – like some of the DWRF slides that are graphical illustrations of what is presented in the previous slide(s). My second slide says I covered the Needs Surveys, but I don't think I did, so I will have to change that slide. I also have a few other things to confirm/change before I make this a final version.

I have not run through it to see how long it takes but I know I would run long. Kris said I would run long if I only had 4 slides. Audacious statement for someone still on probation.

## **Devereaux, Tracy Jo (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, September 09, 2015 6:42 PM  
**To:** Shekter Smith, Liane (DEQ); Thomas, Chuck (DEQ); Bolf, Michael (DEQ); Cook, Pat (DEQ); Philip, Kris (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: DEQ Update 2015 for Fall ACE.pptx  
**Attachments:** DEQ Update 2015 for Fall ACE.pptx

I'm still not done, but here is a cleaner, slightly more streamlined version after incorporating some comments from Pat and Liane. Mr. "Get 'R Done" wanted me to cut more, but at this point I have not yet done so. I have also attempted to clean up and add (or subtract) to some speaker notes.

I did have a slide on the Needs Survey and I left it in. If Mike and Liane find they can't do this in a half hour, I will cut more.

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Tuesday, September 08, 2015 6:19 PM  
**To:** Shekter Smith, Liane (DEQ); Thomas, Chuck (DEQ); Bolf, Michael (DEQ); Cook, Pat (DEQ); Philip, Kris (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** DEQ Update 2015 for Fall ACE.pptx

Here's my first full draft of the DEQ Update for the ACE in the Soo. It is too long. Let me know what you think and what you think we should or could eliminate. I covered the RTCR, a few proposed state rule changes included with the RTCR, the upcoming January 1, 2016 deadlines for state rules modified in 2009 (particularly the Reliability Studies and General Plan requirements), marketing the DWRF, and Secondary Treatment issues.

While there are too many slides, there are quite a few that are very fast – like some of the DWRF slides that are graphical illustrations of what is presented in the previous slide(s). My second slide says I covered the Needs Surveys, but I don't think I did, so I will have to change that slide. I also have a few other things to confirm/change before I make this a final version.

I have not run through it to see how long it takes but I know I would run long. Kris said I would run long if I only had 4 slides. Audacious statement for someone still on probation.

**Devereaux, Tracy Jo (DEQ)**

---

**From:** Graham, Lois (DEQ)  
**Sent:** Friday, September 18, 2015 8:25 AM  
**To:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** Flint water quality complaint

I forwarded the caller's message to Richard so he could also listen to it.

Steve: A woman who did not give her name, but I got the phone number by pressing 5 – 989-472-4165.  
She complains about a concern of Legionella in the City of Flint water supply, that people are dying because of it, that the local health department isn't doing anything about it. Action is needed now. There are lots of discussions on Facebook. People should have the right to drinking water that is right for them.

She called me after I had left for the day and indicated she would call me back today.

Can someone contact her?

Lois Elliott Graham, R.S., M.S.A.  
Office of Drinking Water & Municipal Assistance  
Field Operations Section  
Contamination Investigation Program  
P.O. Box 30241  
Lansing, Michigan 48909-7741  
Office: 517-284-6530  
Fax: 517-241-1328  
[grahaml@michigan.gov](mailto:grahaml@michigan.gov)  
4-South, Pillar N8



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**Devereaux, Tracy Jo (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, September 18, 2015 9:29 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** Fw: Flint water quality complaint

FYI

---

**From:** Graham, Lois (DEQ)  
**Sent:** Friday, September 18, 2015 8:25:21 AM  
**To:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** Flint water quality complaint

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[grahaml@michigan.gov](mailto:grahaml@michigan.gov)  
4-South, Pillar N8



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**Devereaux, Tracy Jo (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Monday, September 21, 2015 12:10 PM  
**To:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Flint water quality complaint

We should contact MDHHS and find out who the best individual/contact is so that we can refer these calls appropriately.

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, September 18, 2015 9:29 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** Fw: Flint water quality complaint

FYI

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**Sent:** Friday, September 18, 2015 8:25:21 AM  
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**Subject:** Flint water quality complaint

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Office of Drinking Water & Municipal Assistance  
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P.O. Box 30241  
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Fax: 517-241-1328  
[grahaml@michigan.gov](mailto:grahaml@michigan.gov)  
4-South, Pillar N8



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**Devereaux, Tracy Jo (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, September 21, 2015 3:31 PM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Flint water quality complaint

Steve, did you respond to this caller last week?

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Monday, September 21, 2015 12:10 PM  
**To:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Flint water quality complaint

We should contact MDHHS and find out who the best individual/contact is so that we can refer these calls appropriately.

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, September 18, 2015 9:29 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** Fw: Flint water quality complaint

FYI

---

**From:** Graham, Lois (DEQ)  
**Sent:** Friday, September 18, 2015 8:25:21 AM  
**To:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** Flint water quality complaint

I forwarded the caller's message to Richard so he could also listen to it.

Steve: A woman who did not give her name, but I got the phone number by pressing 5 – 989-472-4165.

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Fax: 517-241-1328

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4-South, Pillar N8



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## **Devereaux, Tracy Jo (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, September 21, 2015 6:53 PM  
**To:** Laura Wotruba; Sam Watson; Scott, James D. (LARA)  
**Cc:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Dyke, Teri Lee (LARA); Remus, Laura (LARA); Devereaux, Tracy Jo (DEQ); Madziar, Joseph (LARA); Monosmith, Carrie (DEQ)  
**Subject:** RE: Hospital Water Treatment Discussion  
**Attachments:** Secondary Treatment Slides.pptx

Here are the slides covering the issue of secondary treatment that we used in our DEQ Update presentation this past Friday at the Annual Conference of the Michigan Section of the American Water Works Association. I borrowed some of them from an NSF presentation on HACCP that was given at an Association of State Drinking Water Administrators conference last November.

I hope it isn't too late to be of benefit to you.

-----Original Message-----

**From:** Laura Wotruba [<mailto:LWotruba@mha.org>]

**Sent:** Friday, July 31, 2015 9:44 AM

**To:** Sam Watson; Monosmith, Carrie (DEQ)

**Cc:** Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); [nbirchm1@hurleymc.com](mailto:nbirchm1@hurleymc.com); Prysby, Mike (DEQ); Janice Jones; Dyke, Teri Lee (LARA); Amy Barkholz; Remus, Laura (LARA); Scott, James D. (LARA); Looney, Carolyn (DEQ); Devereaux, Tracy Jo (DEQ); Madziar, Joseph (LARA); Kristen Cavanagh-Strong

**Subject:** RE: Hospital Water Treatment Discussion

Just wanted to chime in, so everyone on the call would have my contact information, which is listed in my signature block below. Happy to help with information dissemination as this process moves forward.

Laura Wotruba | Director, Public Affairs Michigan Health & Hospital Association Direct (517) 999-9071 | Cell (517) 290-4841 | Main (517) 703-8601 [lwotruba@mha.org](mailto:lwotruba@mha.org)

-----Original Message-----

**From:** Sam Watson

**Sent:** Thursday, July 30, 2015 5:21 PM

**To:** Monosmith, Carrie (DEQ) <[MONOSMITHC@michigan.gov](mailto:MONOSMITHC@michigan.gov)>

**Cc:** Benzie, Richard (DEQ) <[BENZIER@michigan.gov](mailto:BENZIER@michigan.gov)>; Shekter Smith, Liane (DEQ) <[SHEKTERL@michigan.gov](mailto:SHEKTERL@michigan.gov)>; Busch, Stephen (DEQ) <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)>; [nbirchm1@hurleymc.com](mailto:nbirchm1@hurleymc.com); Prysby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)>; Janice Jones <[JJONES@mha.org](mailto:JJONES@mha.org)>; Dyke, Teri Lee (LARA) <[DykeT@michigan.gov](mailto:DykeT@michigan.gov)>; Amy Barkholz <[abarkholz@mha.org](mailto:abarkholz@mha.org)>; Remus, Laura (LARA) <[RemusL@michigan.gov](mailto:RemusL@michigan.gov)>; Scott, James D. (LARA) <[ScottJ6@michigan.gov](mailto:ScottJ6@michigan.gov)>; Looney, Carolyn (DEQ) <[LOONEYC@michigan.gov](mailto:LOONEYC@michigan.gov)>; Devereaux, Tracy Jo (DEQ) <[DEVEREAUXT@michigan.gov](mailto:DEVEREAUXT@michigan.gov)>; Madziar, Joseph (LARA) <[madziarj@michigan.gov](mailto:madziarj@michigan.gov)>; Laura Wotruba <[LWotruba@mha.org](mailto:LWotruba@mha.org)>; Kristen Cavanagh-Strong <[KCavanagh-Strong@mha.org](mailto:KCavanagh-Strong@mha.org)>

**Subject:** Re: Hospital Water Treatment Discussion

Hello all

Just a follow up to thank you for the out reach. We look forward to sharing your information with our members Sam

Sam R. Watson

Michigan Health & Hospital Association  
517-348-2249  
Sent from a wireless device.

> On Jul 30, 2015, at 1:48 PM, Monosmith, Carrie (DEQ) <[MONOSMITHC@michigan.gov](mailto:MONOSMITHC@michigan.gov)> wrote:

>

> Agenda is attached, there will also be copies at the meeting.

>

>

> 6/29/2015 Update: Adding DLARA staff as optional, you are welcome to attend in person, send a representative, or participate via conference call, call-in info is noted below. Agenda to follow in the near future. Please refer to the attached map for direction to Constitution Hall if attending in person.

>

> Conference Call In Phone Number: 1-888-557-8511 Pass Code: 2752012

> Host (Carrie Monosmith) Pass Code: 6945

>

>

> Carrie Monosmith

> Environmental Health Section Chief

> Office of Drinking Water and Municipal Assistance Michigan Department

> of Environmental Quality Constitution Hall

> 525 West Allegan Street

> PO Box 30241

> Lansing, MI 48909-7741

> Phone: 517-290-2601, Fax: 517-241-1328

> Email: [monosmithc@michigan.gov](mailto:monosmithc@michigan.gov)<<mailto:monosmithc@michigan.gov>>

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>

>

>

> <Con Hall Map.pdf>

> <MHA MISHE July 30 2015 Meeting Agenda.docx> <meeting.ics>

## Devereaux, Tracy Jo (DEQ)

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, November 20, 2015 9:13 AM  
**To:** DEQ-ODWMA-Supervisors-All  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: AWWA Water Services Insider

Share as appropriate.

Of note:

- EPA delivers cyanotoxins plan to Congress
- Advisory council considers recommendations on Lead and Copper Rule
- EPA seeks input on Legionella control
- House-Senate panel takes up transportation bill, WIFIA
- EPA funding could get bogged down in policy disputes

---

**From:** AWWA Public Affairs [mailto:publicaffairs@awwa.org]

**Sent:** Friday, November 20, 2015 9:04 AM

**To:** Shekter Smith, Liane (DEQ)

**Subject:** AWWA Water Services Insider

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Note: To ensure delivery to your inbox please add publicaffairs@awwa.org to your address book



**WATER SERVICES  
INSIDER™**

Nov. 20, 2015

Welcome to the latest issue of the *Water Services Insider*. In this issue:

- 'Good Samaritan' legislation would address abandoned mine issues
- EPA delivers cyanotoxins plan to Congress
- Advisory council considers recommendations on Lead and Copper Rule
- EPA seeks input on *Legionella* control
- House-Senate panel takes up transportation bill, WIFIA
- EPA funding could get bogged down in policy disputes
- House committee reauthorizes bill to assist small water utilities

**'Good Samaritan' legislation would address abandoned**

## **mine issues**

AWWA government affairs staff has been studying concepts for "Good Samaritan" legislation that would allow entities to clean up mine sites without assuming liability risks. With more than 400,000 abandoned hard rock mines throughout the United States, several members of Congress have expressed interest in introducing such legislation. Under current Clean Water Act and Superfund laws, parties that might act as Good Samaritans lack incentives to get involved with these sites. We are gathering input from water utilities and other experts to produce principles that will protect drinking water in the creation of proposed remediation plans.

## **EPA delivers cyanotoxins plan to Congress**

The U.S. Environmental Protection Agency delivered its "Algal Toxin Risk Assessment and Management Strategic Plan for Drinking Water" to Congress on Tuesday, as required by the "Drinking Water Protection Act" (P.L. 114-45). The plan outlines EPA's actions to date, as well as anticipated work to evaluate the risks posed by cyanotoxins in drinking water. While not explicit, it appears that cyanotoxins will be included in the next round of the Unregulated Contaminant Monitoring Rule as part of the agency's continued work to determine if a SDWA standard is appropriate. EPA outlines how it is evaluating the comparability of available ELISA analytical methods with LC/MS/MS methods, as well as collecting information that will inform future recommendations to water utilities and states on management of cyanotoxins. While much of current efforts are focused on microcystin and cylindrospermopsin, the plan recognizes the need for research on a larger universe of cyanotoxins. The UCMR is scheduled for proposal in early 2016 and is to be finalized in 2017.

## **Advisory council considers recommendations on Lead and Copper Rule**

The majority of this week's National Drinking Water Advisory Council meeting focused on drafting recommendations for revising the Lead and Copper Rule. In August, a NDWAC workgroup completed its report for the council's consideration. After evaluating the report and public comments, the NDWAC decided to forward the workgroup's recommendations to EPA Administrator Gina McCarthy. A transmittal package is now in development. The central element of the recommendations is that all systems would develop and implement a strategic plan to remove all lead service lines from water mains to building walls. In public comments to NDWAC, Flint community advocate Lee Walters challenged water systems to do more sooner, including posting their current LCR monitoring instructions to homeowners on their websites and revising those instructions to remove elements that reduce apparent lead levels (e.g., advising pre-stagnation flushing, capping the length of stagnation period, removing aerators). Yanna Lambrinidou, a member of the NDWAC Working Group with a dissenting opinion, called for utilities to make lead monitoring data more readily available to the public as well as other additional measures beyond those reflected in the Working Group report.

## **EPA seeks input on *Legionella* control**

EPA held a public meeting last week to garner input on "Technologies for *Legionella*



Control: Scientific Literature Review." The agency is providing this literature review -- primarily focused on disinfection technologies -- to assist building owners contemplating adding treatment for *Legionella* control. The literature review is not SDWA "guidance," and EPA is explicitly leaving to state primacy agencies decisions on when a building must comply with SDWA requirements. Participants in the meeting were concerned that the literature review might be perceived as guidance, that there were technologies that were not included and that review did not summarize the literature in terms of controlling proliferation of *Legionella* in building systems. The document will be reviewed by subject matter experts in early 2016 and finalized in 2016.

## **House-Senate panel takes up transportation bill, WIFIA**

A House-Senate conference committee began meeting this week to produce a single long-term surface transportation bill, and one that hopefully will contain the long-sought-after technical correction to the Water Infrastructure Finance and Innovation Act. One heartening development occurred during opening statements when U.S. Rep. Bob Gibbs of Ohio, chair of the House Subcommittee on Water Resources and Environment, said fixing WIFIA was one of his three priorities in producing the transportation bill. Rep. Bill Shuster, chair of the House Committee on Transportation and Infrastructure, said his goal was to file the final legislation Nov. 30 and have it on President Obama's desk by Dec. 4. However, he also admitted this would be a difficult task. AWWA ramped up its grassroots and direct advocacy efforts this week. While we have heard considerable support for the fix on the Hill, anything can happen in a political environment. Other water associations have ramped up their efforts as well. The Senate version of the transportation bill already contains the WIFIA correction.

## **EPA funding could get bogged down in policy disputes**

While Congress and President Obama did produce a two-year budget deal earlier this fall, funding for EPA and its programs, including the state revolving loan fund, could still face a complicated road. Bills funding EPA and related agencies in both the House and Senate contain policy riders that could attract a veto or blocking maneuvers in the Senate. Those bills have apparently died. The two highest-profile riders would kill the Clean Power Plan and the rule defining "Waters of the U.S." Right now, the federal government is operating under a continuing resolution until Dec. 11. Expect to see an omnibus spending bill fund the government after that. Debates are still going on in the Capitol on whether the omnibus bill will contain the riders. If it does, the threat of a presidential veto or tough congressional battles will loom.

## **House committee reauthorizes bill to assist small water utilities**

The House Committee on Energy and Commerce has approved and sent to the full House S. 611, a bill that would reauthorize technical assistance for small public water utilities. By passing the Senate bill without amendment, members hoped to speed final passage. It would let EPA make grants or initiate cooperative agreements with non-profit organizations to provide such assistance to small systems. Authorized funding would remain \$15 million annually. Congress has provided more than \$12 million a year for the program even after authorization expired in 2003.



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If you do not wish to receive any emails from AWWA, reply to this message with the word Remove in the subject line or click [Unsubscribe](#).



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

### **Backgrounder on City of Flint Water**

After a change in the water source for Flint residents, there have been concerns related to the water quality, in particular lead in the water, and its impact of the community. As a result, Department of Health and Human Services (DHHS) and the Department of Environmental Quality (DEQ), working with local public health departments and the City of Flint (City), have put together an Action Plan to address public health concerns in the City.

While Flint water is meeting all state and federal drinking water standards, there is an increasing level of concern that the Flint River is not the best water source. The City's Technical Advisory Committee recommended the City switch back to DWSD. In addition, recent studies by Hurley Children's Hospital, and confirmed by DHHS, have indicated a rise in blood lead levels in some Flint children. Sample screening completed last week by the DEQ indicated that some Flint Public Schools have detectable lead levels in their water.

#### **Action Plan:**

Immediately, the City and State announced the following steps:

- Governor named Dr. Eden Wells as Flint Public Health Advisor
- Advisories issued recommending residents flush their cold water pipes before use, as well as only use water from the cold water tap for drinking, cooking and especially making baby formula.
- Schools are advised to not use the drinking water fountains and are using bottled water.
- Free filters are available to all households in Flint, along with replacement filters.
- Flint Public Schools were screened for lead exposure.

For the near term, the City and State are asking for/ doing the following:

- Switch the drinking water source from the Flint River to DWSD.
- Test and inspect all schools in Flint, including charter and parochial schools.
- Free water testing for all homes.
- Expand exposure testing to additional households in Flint.

For the long term health of all Flint residents, the City and State have committed to:

- Switching to the Karegnondi Water Authority in the summer of 2016 as the permanent water supply for the City of Flint
- Allow for Drinking Water Revolving Loan funds to be used to expedite the replacement of private residential lead service lines.
- Lead exposure campaigns for homes, schools and communities.

**Budget Request:**

To facilitate the action plan outlined above, the State is requesting \$10.6 million (\$8.2 million GF). The funding will address 4 priority areas:

1. Provision of filters for residential service (\$2,016,000)

Filters will be provided to all Flint households, including replacement filters until the system is fully optimized. Each filter cost is \$20.

2. 50% of the estimated cost to reconnect temporarily to the DWSD (\$6,000,000)

The City has estimated it will cost an additional \$1.3 million per month to use DWSD instead of the Flint River. The State and City have agreed to split the cost through July 2016 when the new Karegnondi Water Authority will be completed and Flint will switch to that water source.

3. Funding for testing water samples (\$1,000,000)

New testing protocols for schools will require each faucet in the school be tested and evaluated at the State's lab. In addition, lead exposure testing in homes will result in thousands of additional samples that will need to be evaluated. Each sample cost \$26 to process.

4. Lead exposure testing and inspections (\$1,600,000)

DHHS, DEQ and LARA are pulling together a team to go into schools and high risk homes to test and evaluate lead exposure.

## **Flint Water FY 2016 Supplemental Budget Request**

### **1. \$1 Million for Filters**

The \$1 million for filters will be used to purchase filters for households in Flint that do not qualify for assistance under any of the DHHS assistance programs. Filters for those residents will be paid for out of funding already in place in DHHS' budget. Each filter is \$20 and they were ordered in bulk through Home Depot. Filters are being distributed through local public health departments, with documentation filed for each filter handed out.

### **2. \$6 Million for switch from Flint River to DWSD**

The City of Flint estimates it will cost the City an additional \$1.3 million per month to use DWSD instead of the Flint River. The State and the City agreed to split the cost through June 2016, when the new Karegnondi Water Authority will be completed and Flint will switch to that water source. (\$1.3 million for 9 months)

### **3. \$1.35 Million for resources to do community Lead Exposure Testing**

DEQ, DHHS and LARA are assembling a team to go into schools, childcare facilities, and other high lead exposure health risk locations to test and follow up on lead exposure.

### **4. \$1 Million for evaluating sample results at the State Lab**

The new testing protocols for schools will require each faucet in the school to be tested and evaluated at the State lab. In addition, lead exposure testing in homes will result in tens of thousands more samples that will be need to processed. Each sample costs \$26 to process.

**Total Ask: \$9.35 Million, \$7.15 GF**

**Krisztian, George (DEQ)**

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Sunday, November 15, 2015 3:12 PM  
**To:** Anderson, Madhu (DEQ); Fiedler, David (DEQ); Goodhall, Mary (DEQ); Howes, Sarah (DEQ); Krisztian, George (DEQ); Pallone, Maggie (DEQ); Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ); Tommasulo, Karen (DEQ); Wurfel, Brad (DEQ); Wyant, Dan (DEQ)  
**Cc:** Copen, Leigh (DEQ); Feuerstein, Heather (DEQ); Olszewski, Rosemarie (DEQ); Shaler, Karen (DEQ); Shaw, Eric (DEQ)  
**Subject:** Director's 8:00 Exec Team List for Monday, Nov 16,, 2015, j8:00

Dear Executive Team attending the 8:00 Monday morning meeting:

For our 8:00 meeting in the morning. Thank you.

**Executive**

- City of Flint Drinking Water and Action Steps
- Mid-Managers Retreat DeBrief – Make up session November 12
- Future SMT Meeting Agenda Items
- Directors' Schedule
- Any followup from the meeting with the Governor on Enbridge – September 23
- Any followup from the meeting with the Governor on Budget – October 20
- Director's Advisory Council for 2016 Agenda Items
- Michigan Petroleum Pipeline Task Force – Implementation of Recommendations
- Michigan Pipeline Safety Advisory Council - Next Meeting December 14
- Employee Survey Results – Action Plan
- Organizational Excellence
- Invasive Carp Updates
- District Visits – Plan one for Detroit Office?
- Enforcement Policy (signed)
- 

**Admin (Amy Epkey)**

- 2017 Budget Development
- Groundwater Fees
- Updates on Underground Storage Tank Authority
- Michigan Strategic Water Fund
- Administration Division In-Service Suggestions
- Budget

**AQD**

- 111d Updates
- Air Rules

**OGL**

- Water Strategy

#### OEA

- Action Learning Teams
- Environmental Justice
- Compliance Assistance/Customer Service/Employee Engagement

#### ODWMA

- City of Flint Drinking Water
- SAW Grants

#### OWMRP

- Recycling Council Updates
- Ontario Power Generation and MHSA

#### OOGM

- High Density Oil & Gas Development Workgroup

#### WRD

- Water Use
- Lake Erie Issues
- Enbridge
- Waters of the US/Wetlands/Blueberries
- DWSD
- Part 31 Water Rules Strategy
- Part 5, Part 13, Part 23, Part 22

#### RRD

- 201 Amendments
- 201 Criteria Workgroup

Thanks.

Mary Beth Thelen  
Management Assistant to Director Dan Wyant  
Department of Environmental Quality  
Constitution Hall, 6th Floor South  
Phone: 517-284-6712 or 284-6700 (new numbers)  
Fax: 517-241-7401  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)

*Extra for George* *Wurfel's Encls*

---

**Olszewski, Rosemarie (DEQ)**

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, January 14, 2016 9:59 AM  
**To:** Olszewski, Rosemarie (DEQ)  
**Subject:** FW: Legionnaires  
**Attachments:** Genesee Co. Legionnaires - Otisville; NYC Legionnaires Disease Outbreak; FW: Information Request and Documentation ; RE: Stuff and things; FW: Information Request and Documentation ; RE: Information Request and Documentation ; FW: Urgent Legionnaire Disease testing in Water; RE: Information Request and Documentation ; FW: Information Request and Documentation

Rosemarie, please print one packet so that I can give to Director Creagh.

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Thursday, January 14, 2016 9:32 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Feuerstein, Heather (DEQ)  
**Subject:** Legionnaires

Brad Wurfel  
Communications Director,  
Michigan Department of Environmental Quality  
[wurfelb@michigan.gov](mailto:wurfelb@michigan.gov)  
517-230-8006 (cell)



**Olszewski, Rosemarie (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, August 06, 2015 11:08 AM  
**To:** Wurfel, Brad (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ)  
**Subject:** Genesee Co. Legionnaires - Otisville

FYI. WILX also briefly mentioned this case in conjunction with a story on the NYC outbreak this morning.

<http://www.abc12.com/home/headlines/Otisville-woman-diagnosed-with-Legionnaires-disease-dies-320529632.html>

Brad you may want to check in with your counterpart at DHHS to see what kind of media inquiries they are getting in response to the NYC outbreak.

Stephen Busch, P.E.  
MDEQ Lansing District Coordinator  
Office of Drinking Water and Municipal Assistance  
Lansing and Jackson District Supervisor  
517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)

## **Olszewski, Rosemarie (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Monday, August 03, 2015 8:49 AM  
**To:** Monosmith, Carrie (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)  
**Cc:** Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ)  
**Subject:** NYC Legionnaires Disease Outbreak

Not sure if any of you might have seen this over the weekend. Should the outbreak continue to spread, this issue may gain traction nationwide.

<http://www.usatoday.com/story/news/nation/2015/08/01/legionnaires-death-toll-climbs-4-dead-nyc/30998721/>

<http://www.cnn.com/videos/health/2015/08/02/new-york-legionnaires-disease-dnt-ganim-nr.cnn-ap>

Stephen Busch, P.E.  
MDEQ Lansing District Coordinator  
Office of Drinking Water and Municipal Assistance  
Lansing and Jackson District Supervisor  
517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)

**Olszewski, Rosemarie (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 19, 2015 3:30 PM  
**To:** Sygo, Jim (DEQ); Wurfel, Brad (DEQ)  
**Cc:** Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** FW: Information Request and Documentation

Please see the note below.

Has there been any further communication with or from DCH?

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, March 19, 2015 3:05 PM  
**To:** Benzie, Richard (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** FW: Information Request and Documentation

Response from Jim Henry below.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Henry, James [<mailto:jhenry@gchd.us>]  
**Sent:** Thursday, March 19, 2015 12:15 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Valacak, Mark; Cupal, Suzanne  
**Subject:** RE: Information Request and Documentation

Hello Mr. Busch,

Thanks for your response. I'm looking forward to working with your office moving forward. Based upon my experiences with this investigation, I think it is necessary for my communications to be candid and followed up in writing whenever possible. Our goal is to successfully conduct this investigation in efforts to better protect the public.

I agree there are ambiguities written in the FOIA request. GCHD does not have municipal water system expertise and we are continuously learning about the processes. The FOIA request is specific enough that we should have received a timely response from the City of Flint. Also, it is addressed to the City and I apologize if there were misunderstandings regarding the intended recipient.

There have not been any conclusions regarding the source of illnesses. Our team is gathering information and we suspect there may be several sources. It has been made clear that the Flint municipal water system is in compliance with the Safe Drinking Water Act. It seems reasonable that your office would be involved regardless if a potential health risk from municipal water is related to consumption, inhalation or dermal exposure. Perhaps the legislation should be revisited to better address risks.

As you mentioned, we had communications with your office in October 2014, regarding Legionella, but I also had three telephone conversations with Mr. Michael Prysby, from your office between January 21, 2015 and January 23, 2015. These conversations occurred around the same time that your office participated with the TTHM presentation in Flint. I "explicitly explained" the details of the Legionella concerns and the possible associations with the Flint municipal water system and I specifically requested to meet with your office for further discussions.

Mr. Prysby informed me that the concerns were discussed with you. I was informed there was no reason to meet because the municipal water system is in compliance with the Safe Drinking Water Act. Other than the timeframes written in your email, you are correct, I did not contact your office again until the email, dated March, 10, 2015.

GCHD has been working closely with MDCH and has consulted with CDC on several occasions regarding the epidemiological investigation. Also, we have been working with Legionella and municipal water experts, and recently with the USEPA. Based upon these discussions we have been informed that it is likely that a small amount of Legionella will survive the water treatment process at the plant and enter into the distribution system.

Our team is in the process of developing plans, which may include sampling locations within the distribution system and comparing environmental and clinical isolates. We recognize potential social, political and economic impacts regarding this investigation and need to be prepared for all outcomes. Hopefully, your office, the regulatory agency, will be available for assistance.

If a representative from your office is available to meet next week, please respond with some dates and times. I think it would be appropriate for the City to attend meetings and I will contact Mr. Croft, Flint DPW Director, after I receive a response from your office.

Thank you

Jim

Jim Henry  
Jim Henry RS, MBA  
Environmental Health Supervisor  
Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
630 S. Saginaw St., Suite 4  
Flint, MI 48502-1540  
Phone (810) 257-3618 Fax (810) 257-3125  
E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



\*NOTICE: This e-mail, including attachments, is intended for the exclusive use of the addressee and may contain proprietary, confidential or privileged information. If you are not the intended recipient, any disclosure, use, distribution, copying, or taking of any action in reliance of the contents of this e-mail is strictly prohibited. If you have received this e-mail in error, please notify me via e-mail and permanently delete the original and destroy all copies. Thank you.

For a copy of the Health Department's Notice of Information Practices, contact the Health Department or visit the Health Department's website at <http://www.gchd.us/>

---

**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]  
**Sent:** Friday, March 13, 2015 3:47 PM  
**To:** Henry, James

**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation

Mr. Henry,

The January 27, 2015, FOIA request you provided was directed to the City of Flint, not the DEQ. The DEQ has no record of a FOIA request from your office for such information. It is our understanding that the City has responded to your FOIA request, has helped you adequately redefine your request within the City's scope of public record to address such ambiguities as "any additional areas of concern", and provided you with additional information beyond the scope of your request.

The DEQ fully recognizes the public health threat posed to individuals that contract Legionnaires' Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act. Your email below claims that you have explicitly explained the situation to our Department. However, since contacting our office early last October to indicate a rise in cases, we have not received any further information regarding your epidemiological investigation into this matter.

Further, conclusions that legionella is coming from the public water system without the presentation of any substantiating evidence from your epidemiologic investigation appears premature and prejudice toward that end.

It is highly unlikely that legionella would be present in treated water coming from the City of Flint water treatment plant given the treatment plant's use of ozone along with complete treatment and chlorine disinfect contact time to comply with federal surface water treatment rules for potable water. Detections of total coliform or heterotrophic bacteria in the City's public water distribution system indicate an environment where bacterial growth may be supported. However, there is no direct correlation that can be made to the presence of legionella. While total organic carbon levels in potable water may serve as a food source for bacteria growth in private plumbing system, water temperatures in the City's distribution system are below legionella growth range, and chlorine residual levels would also limit such growth.

Our office agrees that water main breaks, water leaks, and system repairs are possible vectors for legionella to enter the public water system. These should be investigated as part of your epidemiology. DEQ staff can be made available to assist GCHD and the City regarding such matters, but to date no request by GCHD for any such meeting has been received, let alone declined as alleged in your email.

If GCHD is seeking assistance to complete its epidemiological investigation regarding this matter, such resource requests should be directed to the Michigan Department of Community Health. Our Office agrees that a multi-agency partnership would be beneficial to move forward and develop a unified response. In that respect, if our Office can be of any further assistance you may contact me directly.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <[MVALACAK@gchd.us](mailto:MVALACAK@gchd.us)>, "Cupal, Suzanne" <[scupal@gchd.us](mailto:scupal@gchd.us)>, "Hasan, Shurooq" <[shasan@gchd.us](mailto:shasan@gchd.us)>, "Childs, Bonnie" <[BCHILDS@gchd.us](mailto:BCHILDS@gchd.us)>, "Hallwood, Dawn" <[dhallwood@gchd.us](mailto:dhallwood@gchd.us)>, "Johnson, M.D., Gary" <[GJOHNSON@gchd.us](mailto:GJOHNSON@gchd.us)>

**Subject: Information Request and Documentation**

Hello everyone,

The Genesee County Health Department has made several written and verbal requests for specific information since October, 2014, including a Freedom of Information Act Request on January 27, 2015. The information still has not been received and the city's lack of cooperation continues to prevent my office from performing our responsibilities.

The Genesee County Health Department has the responsibility to conduct illness investigations and consider all potential sources, this is not optional. In 2014, Genesee County experienced a significant increase of confirmed Legionella illnesses relative to previous years. Legionella can be a deadly, waterborne disease that typically affects the respiratory system.

The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

This situation has been explicitly explained to MDEQ and many of the city's officials. I want to make sure, in writing that there are no misunderstandings regarding this significant and urgent public health issue. The Trihalomethane issues "pale in comparison" to the potential public health risks of Legionella.

I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

## **Olszewski, Rosemarie (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 13, 2015 4:00 PM  
**To:** Wurfel, Brad (DEQ)  
**Subject:** RE: Stuff and things

Understood.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, March 13, 2015 3:57 PM  
**To:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Stuff and things

Hey, just got off the phone with MDCH counterparts. Working to get a Monday meeting with multi agencies to discuss the broad situation. Let's please try to keep formal written powder dry until we get everyone around a table?

b

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 13, 2015 3:47 PM  
**To:** [jhenry@gchd.us](mailto:jhenry@gchd.us)  
**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation

Mr. Henry,

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Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>

**Date:** March 10, 2015 at 6:40:17 PM EDT

**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>

**Subject:** Information Request and Documentation

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Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

## Olszewski, Rosemarie (DEQ)

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, March 13, 2015 3:55 PM  
**To:** Wurfel, Brad (DEQ); Benzie, Richard (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** FW: Information Request and Documentation  
**Attachments:** FOIA Request Flint Water.doc

FYI – in case you weren't bcc'd on this note. Just wanted to make sure we stay on the same page....

Nicely done Steve and Mike.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 13, 2015 3:47 PM  
**To:** jhenry@gchd.us  
**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation

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Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
**Subject:** Information Request and Documentation

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Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
Flint, MI 48502

## **RE: Flint Water Plant Information Request**

Dear FOIA Coordinator,

Under provisions of the Michigan Freedom of Information Act (MCLA 15.231 et seq; MSA 4.1801 (1) et seq) please provide copies of the following:

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Sincerely,

**Jim Henry**

Jim Henry  
Environmental Health Supervisor  
Genesee County Health Department  
630 S. Saginaw Street  
Flint, MI 48502

**Better Life Through Better Health**

**Floyd J. McCree Courts & Human Services Building ♦ 630 S. Saginaw Street, Ste. 4 ♦ Flint, Michigan 48502-1540**

**Burton Branch ♦ G-3373 S. Saginaw Street ♦ Burton, Michigan 48529**

Main Phone 810-257-3612 ♦ Visit us at: [www.gchd.us](http://www.gchd.us)

**Olszewski, Rosemarie (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 13, 2015 3:47 PM  
**To:** jhenry@gchd.us  
**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Attachments:** FOIA Request Flint Water.doc

Mr. Henry,

The January 27, 2015, FOIA request you provided was directed to the City of Flint, not the DEQ. The DEQ has no record of a FOIA request from your office for such information. It is our understanding that the City has responded to your FOIA request, has helped you adequately redefine your request within the City's scope of public record to address such ambiguities as "any additional areas of concern", and provided you with additional information beyond the scope of your request.

The DEQ fully recognizes the public health threat posed to individuals that contract Legionnaires' Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act. Your email below claims that you have explicitly explained the situation to our Department. However, since contacting our office early last October to indicate a rise in cases, we have not received any further information regarding your epidemiological investigation into this matter.

Further, conclusions that legionella is coming from the public water system without the presentation of any substantiating evidence from your epidemiologic investigation appears premature and prejudice toward that end.

It is highly unlikely that legionella would be present in treated water coming from the City of Flint water treatment plant given the treatment plant's use of ozone along with complete treatment and chlorine disinfect contact time to comply with federal surface water treatment rules for potable water. Detections of total coliform or heterotrophic bacteria in the City's public water distribution system indicate an environment where bacterial growth may be supported. However, there is no direct correlation that can be made to the presence of legionella. While total organic carbon levels in potable water may serve as a food source for bacteria growth in private plumbing system, water temperatures in the City's distribution system are below legionella growth range, and chlorine residual levels would also limit such growth.

Our office agrees that water main breaks, water leaks, and system repairs are possible vectors for legionella to enter the public water system. These should be investigated as part of your epidemiology. DEQ staff can be made available to assist GCHD and the City regarding such matters, but to date no request by GCHD for any such meeting has been received, let alone declined as alleged in your email.

If GCHD is seeking assistance to complete its epidemiological investigation regarding this matter, such resource requests should be directed to the Michigan Department of Community Health. Our Office agrees that a multi-agency partnership would be beneficial to move forward and develop a unified response. In that respect, if our Office can be of any further assistance you may contact me directly.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

**From:** "Henry, James" <jhenry@gchd.us>

**Date:** March 10, 2015 at 6:40:17 PM EDT

**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>

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Respectfully,

Jim

Jim Henry

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

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Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
Flint, MI 48502

## **RE: Flint Water Plant Information Request**

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## **Olszewski, Rosemarie (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, March 13, 2015 10:32 AM  
**To:** Wurfel, Brad (DEQ)  
**Subject:** FW: Urgent Legionaire Disease testing in Water

FYI

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, March 28, 2014 2:18 PM  
**To:** Lachance, Amy (DEQ); Pieper, Julia (DEQ); Krisztian, George (DEQ)  
**Cc:** Dykema, Linda D. (DCH); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ); Weaver, Cynthia (DEQ); Wozniak, Gary (DEQ)  
**Subject:** RE: Urgent Legionaire Disease testing in Water

Thank you everyone for the prompt responses and your efforts to provide excellent customer service. As recently as our ODWMA Managers Meeting this past Wednesday, we have been discussing the need for the public water supply program to prepare for the possibility of Legionnaires being identified in Michigan based on what we are learning from other states. It appears we may be developing some procedures on the go. Thanks again.

Richard Benzie, P.E., Acting Chief  
Field Operations Section  
Office of Drinking Water and Municipal Assistance, MDEQ  
517-284-6512

---

**From:** Lachance, Amy (DEQ)  
**Sent:** Friday, March 28, 2014 12:53 PM  
**To:** Pieper, Julia (DEQ); Krisztian, George (DEQ); Benzie, Richard (DEQ)  
**Cc:** Dykema, Linda D. (DCH); Shekter Smith, Liane (DEQ); DeBruyn, Dana (DEQ); Weaver, Cynthia (DEQ); Wozniak, Gary (DEQ)  
**Subject:** RE: Urgent Legionaire Disease testing in Water

I gave Mick McGuire with the Van Buren/Cass Health Department this information and he will call Shannon Johnson to coordinate testing. He will also contact Kevin Anderson at the City of Dowagiac to get a sample from them.

Amy Lachance  
Grand Rapids and Kalamazoo District Supervisor  
Office of Drinking Water and Municipal Assistance  
Department of Environmental Quality  
Cell Phone Number: 616-490-9590

---

**From:** Pieper, Julia (DEQ)  
**Sent:** Friday, March 28, 2014 12:42 PM

**To:** Krisztian, George (DEQ); Benzie, Richard (DEQ)  
**Cc:** Dykema, Linda D. (DCH); Shekter Smith, Liane (DEQ); Lachance, Amy (DEQ); DeBruyn, Dana (DEQ)  
**Subject:** RE: Urgent Legionaire Disease testing in Water  
**Importance:** High

Here is the reply from DCH:  
Hi Julia,

We have the capacity to look for Legionella in water, but we only perform the test when it is a part of an epidemiologic investigation. If the health department contacts our Bureau of Epidemiology and they confirm the human case and want to look for a source, we can test. They may want to contact Shannon Johnson in the Bureau of Epi. Her number is 335-9597.

James T. Rudrik, Ph.D.  
Director, Infectious Disease Division  
Michigan Department of Community Health  
3350 N ML King Jr Blvd  
Lansing, MI 48906  
Phone: 517-335-9641  
Fax: 517-335-9631

Julia Pieper  
Drinking Water Coordinator  
Organic Sub-Unit Manager  
DEQ-RRD-Laboratory Services  
[pieperj2@michigan.gov](mailto:pieperj2@michigan.gov)  
(517)-335-8076 phone  
(517)-335-8562 fax

---

**From:** Krisztian, George (DEQ)  
**Sent:** Friday, March 28, 2014 10:59 AM  
**To:** Benzie, Richard (DEQ); Pieper, Julia (DEQ)  
**Cc:** Dykema, Linda D. (DCH); Shekter Smith, Liane (DEQ); Lachance, Amy (DEQ); DeBruyn, Dana (DEQ)  
**Subject:** RE: Urgent Legionaire Disease testing in Water

Hi Richard,

We do not do Legionella testing. Julie is in the process of finding out from DCH if they can do it. She will provide that information once it becomes available.

George

George L. Krisztian  
Laboratory Director  
Michigan Department of Environmental Quality  
(517) 335-8812

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, March 28, 2014 10:53 AM  
**To:** Krisztian, George (DEQ); Pieper, Julia (DEQ)  
**Cc:** Dykema, Linda D. (DCH); Shekter Smith, Liane (DEQ); Lachance, Amy (DEQ); DeBruyn, Dana (DEQ)

**Subject:** FW: Urgent Legionnaire Disease testing in Water  
**Importance:** High

George or Julia,

Are you prepared for performing analyses for legionella in water? If so, would you please answer the questions below. If not, do you know if the DCH lab is capable of doing so? Can you provide a contact. Liane suggest I copy Linda Dykema, so perhaps she can answer for community health, particularly if there are any labs in Southwest Michigan that may be relied upon if the state is unable to do so.

Richard Benzie, P.E., Acting Chief  
Field Operations Section  
Office of Drinking Water and Municipal Assistance, MDEQ  
517-284-6512

---

**From:** Lachance, Amy (DEQ)  
**Sent:** Friday, March 28, 2014 10:39 AM  
**To:** Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** FW: Urgent Legionnaire Disease testing in Water  
**Importance:** High

FYI

Amy Lachance  
Grand Rapids and Kalamazoo District Supervisor  
Office of Drinking Water and Municipal Assistance  
Department of Environmental Quality  
Cell Phone Number: 616-490-9590

---

**From:** Weaver, Cynthia (DEQ)  
**Sent:** Friday, March 28, 2014 10:37 AM  
**To:** Pieper, Julia (DEQ)  
**Cc:** Lachance, Amy (DEQ); DeBruyn, Dana (DEQ)  
**Subject:** Urgent Legionnaire Disease testing in Water  
**Importance:** High

3-28-14

Julia,

Summary at 10:05am Mick McGuire of the Van Buren Cass County District Health Dept contacted this office.

- Per Mick McGuire, Van Buren Cass County District Health Dept, there is a man who was diagnosed with Legionnaires Disease either yesterday, or today.
- It is not known which location this "man" may have worked at: Either Cass County or Berrien County.
- The VBCCDHD is investigating IF the "man" works at a previously "inactive" Type 2 public water supply in Cass County.
  - The VBCCDHD is ALSO investigating IF the "man" works at a previously "inactive" Type 2 public water supply in Berrien County.

The QUESTIONS:

DEQ Lab:

- 1) Does our DEQ lab analyze water for Legionnaires' Disease?
- 2) If so, what bottle is used?

3) If so, and IF sample(s) are collected today, at what time does the sample need to be into the lab?  
Are there other Lab options:

4) Do you have names and contacts of a Cass County or Kalamazoo County lab which can test for Legionnaires' Disease in water?

5) Do you have names and contact of a Berrien County lab which can test for Legionnaires' Disease in water?

6)

*Cynthia Weaver*

*Department of Environmental Quality*

*Office of Drinking Water & Municipal Assistance*

*Type 2 Noncommunity pws Program and Private Well/Type 3 pws Program*

*weaverc@michigan.gov*

*616-307-6736*

**Olszewski, Rosemarie (DEQ)**

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, March 12, 2015 8:50 AM  
**To:** Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)  
**Cc:** Shaler, Karen (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Information Request and Documentation  
**Attachments:** FOIA Request Flint Water.doc

For reference, attached is the county health department's FOIA request to the City of Flint from January.

Stephen Busch, P.E.  
Lansing and Jackson District Supervisor  
Office of Drinking Water and Municipal Assistance  
MDEQ  
517-643-2314

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 12, 2015 8:41 AM  
**To:** Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Howes, Sarah (DEQ)  
**Cc:** Shaler, Karen (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ)  
**Subject:** FW: Information Request and Documentation  
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The district received this late Tuesday.

Steve Busch has indicated that the district has not received a meeting request from Jim Henry or the Genesee County Health Department as indicated in his email below.

The FOIA is specifically directed to the City of Flint not the DEQ.

While the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

Seems like the next step is to communicate with DCH and possibly develop a joint strategy/response. Not sure who in Exec wants to take the lead on this. Steve Busch and Mike Prysby will continue to be lead for us on this. They have been in contact with DCH recently but only to learn that little progress has been made in identifying a source or sources for the illnesses.

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**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)"

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Environmental Health Supervisor

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# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
1101 S. Saginaw Street, 3<sup>rd</sup> floor  
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Environmental Health Supervisor

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Gary K. Johnson, M.D., M.P.H., Medical Director

January 27, 2015

FOIA Coordinator, City of Flint  
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Flint, MI 48502

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Main Phone 810-257-3612 ♦ Visit us at: [www.gchd.us](http://www.gchd.us)

Just a couple of questions:

What is the status of the "after action" report requested by the governor?

Does the state believe investigations by the U.S. Justice Department or FBI would be helpful?

What is the state's response to Sharp's suggestion of creating a database of everyone who might have been exposed to the water and attempting to contact and test them?

Thanks, Paul Egan  
Detroit Free Press  
517-372-8660

October 12 2015  
 Look at Press Article

PROJECT PLANNING NOTES

- FIRST IN PROCESS OF PROPOSING SCENARIOS SHOULD HAVE LIST BY DOB TODAY
- FIRST SCENARIOS OUT GET ANNUAL REPORTS
- COORDINATING REPORT FROM TAC
- TRYING TO SET UP WEEKLY MEETINGS WITH APR'S FROM 3 DEPTS DHS, DOI, LARA
- SETTING UP WEEKLY MEETING WITH MARYAN
- DHS & LARA WISH TO BE INCLUDED?
- SETTING UP TOUR OF WHP, MAUSMONT
- INITIAL AFTER ACTION PLAN MEETING TO BE SCHEDULED THIS WEEK (THURSDAY?)
- FORMULATE ISSUES THAT WILL NEED TO BE DEAL WITH
- DAILY REPORTS TO THE GOVERNMENT

- DAILY REPORTS TO BY 8AM EACH MORNING REPRESENTATIVE THE PREVIOUS DAY \*

before to add list to LARA  
 ONCE IT HAS BEEN FINALIZED  
 - LINDA TO APPROVE/COMMENT AND REORGANIZE  
 - GET CONTACT INFO FOR 3 REPORT SCENARIOS

LARI  
 DHS  
 WILL CO-OP

FOCUS UP  
 WITH  
 LARA

GEORGE  
 SUELL

\* TO WHATE  
 & LINDA  
 WEEKLY  
 CONFERENCES

\* THIS IS FOR  
 THIS REPORT  
 FOR TUESDAY  
 AM

\* \*

ACC LOCATION  
 (ZIP)  
 WILL SET  
 REPORT

PROJECT PLANNING

Sample ID	Virginia Tech-First draw Lead (ppb)	MDEQ Lead (ppb)	WARD	Zipcode
8	40.6	42	9	48507
15	4.358	ND	9	48507
16	24.4	5	5	48505
19	2.484	ND	9	48507
26	16.52	21	5	48505
27	1.984	3	1	48505
29	5.519	3	2	48504
30	0.639	2 <sup>4</sup>	4	48506
31	8.2 <sup>3</sup>	8	6	48503
33	66.88	42	6	48503
34	20.41	5	1	48505
36	5.06	3	8	48503
79	5.8 <sup>1</sup>	5 <sup>2</sup>	6	48503
134	10.6	6	9	48507
148	2.325	22	9	48507
157	7.2	4	7	48503
182	15.55	ND	6	48504
207	8.471	5	7	48503
208	11.5	6	9	48507
274	6.601	2	7	48503
291	2.261	ND	3	48506

<sup>1</sup>The address was sampled two times and it represents the average value of 5.2 ppb and 6.3 ppb;

<sup>2</sup>The address was sampled two times and it represents the average value of 2 ppb and 8 ppb;

<sup>3</sup>The address was sampled two times and it represents the average value of 6.1 ppb and 10.3 ppb;

<sup>4</sup>The address was sampled two times and it represents the average value of 2 ppb and 2 ppb;

ND = Not Detectable.



## Frequently Asked Questions About

# Lead & Your Body



### Pregnant Woman

If you are exposed to lead when pregnant, the lead can be passed on to your fetus, possibly causing:

- premature birth
- a smaller baby
- learning difficulties
- slower growth in young kids

### Healthy Adult

You are at lower risk of health problems from small amounts of lead.

Most health problems that come from lead in adults are because they are exposed to a lot of it at their job - whether they are in painting or construction or work at a factory where lead is used in a product.

If you work with lead, you should have regular blood tests to make sure you're not getting too much into your body.



### Kids

Even small amounts of lead can harm kids' health. Your doctor can do a simple blood test to find out if your child has been exposed to lead. Some possible signs of lead poisoning include:

- a bad stomachache
- muscle weakness
- paleness (caused by anemia)

Over time lead can affect a kids'

- brain development
- growth rate

### How Does Lead Get Into Your Body?

**Eating and breathing lead dust is the most common way lead gets into your body.**

- When kids accidentally eat lead, up to 50% can be absorbed into their bodies, compared to 3 to 10% for adults. This is why protecting kids from even small amounts of lead is important.

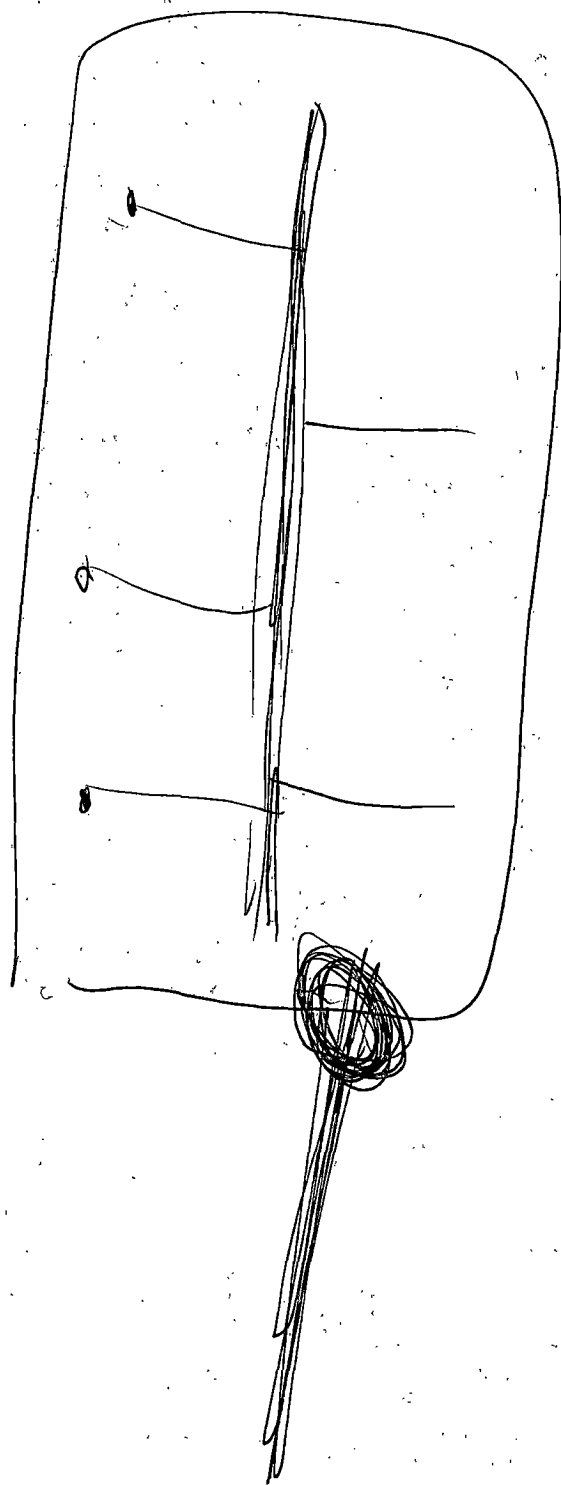
**Lead does not absorb into your skin quickly or at high levels.**

- The CDC reviewed a study where a cream with high levels of lead was put on the skin of adults. The cream was left on their skin for 12 hours. The amount of lead that soaked into their skin was very, very small (less than 0.3 percent).
- Taking a shower or bath in water containing lead at levels found in most tap water in Michigan is unlikely to be a problem for anyone, including kids.

If you think you or your children have been exposed to lead, please talk to your doctor or health department about getting a simple blood test to measure how much lead might be in your body.

For more information on protecting yourself and your family from lead, please visit: [www.michigan.gov/lead](http://www.michigan.gov/lead), or you can call the Michigan Department of Health and Human Services at 1-800-648-6942. We will help direct you to the best department that can answer your questions about lead in your home.

You can also call the Flint Water Department at 810-787-6537 to request a free or low-cost water test. If you use City of Flint water, you can call 211 to find out where you can pick up a free NSF-approved water filter.



Cik-

## Briefing Paper for Call with MDEQ on July 21, 2015 MDEQ Implementation of LCR Rule and Flint Issues

### Issue #1: Is there a public health concern regarding lead in Flint or other regulatory requirements?

- Under State policy ODWMA-399-027, the wholesale system is responsible for corrosion control treatment. Detroit, as the wholesale system, was providing this for Flint. When Flint changed to no longer be a consecutive system, and instead using the Flint River as its water source, it did not begin its own corrosion control program and is not currently practicing corrosion control treatment at the Water Treatment Plant.
- Prior to the change from being a consecutive public water system to the Detroit Water and Sewerage Department (DWSD) system and associated switch in source water, the City of Flint was conducting LCR sampling every three years. Due to the switch in water sources, the Michigan Department of Environmental Management (MDEQ) required the City of Flint to increase the number of monitoring sites from 50 to 100 sites for two consecutive rounds of monitoring (July through December 2014 and January through June 2015).
- The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper.
- As of June 30, 2015, we believe MDEQ received all 100 sample results from the second round of monitoring and is incorporating citizen-requested sample results that meet the Tier 1 criteria.
- HQ confirmed, per the Water Supply Guidance #174 that citizen-requested sample results should be included in the 90<sup>th</sup> percentile calculations.
- We believe that the results of the two rounds of sampling will support an exceedance of 5 ug/l. This will result in the need for a corrosion control study, but not public education.
- Flint plans to switch to another source in 2016 making the corrosion control study timing complicated.
- Compliance with other regulatory requirements: Appears to be doing fine with Stage 2 DBP rule and re-characterizing the distribution system based on the new source of water, but not sure about LT2 compliance for first round monitoring for cryptosporidium. We'd want to ask if Flint had existing data on Crypto for the Flint River (they would be allowed to grandfather data for the 1<sup>st</sup> round of sampling). If not, they'd need to start sampling as soon as possible to get 1<sup>st</sup> round crypto results). If they did have old data, they'd still be expected to start a 2<sup>nd</sup> round of Crypto monitoring already (April 2015 – since Flint's population is still above 100,000).

### Discussion Items:

- Discuss most recent 2 rounds of 6-months monitoring results and 90<sup>th</sup> percentile calculations and inclusion of the citizen-requested samples.
- Based on results, what are the next steps?
- Set the stage for why we are concerned about lead levels – since Flint is not feeding phosphate and the lead, phosphate, and cadmium are tracking, the phosphate is likely coming off the pipes.
- Is there anything we should do now to reduce the exposure risk to lead?
- Discuss possibly accelerating a corrosion control study for Flint. However, this should be done with a comprehensive look at all rule requirements and treatment needs. EPA/ORD expert are available to assist.
- How is Flint doing with meeting all the other regulatory requirements? Are they meeting LT2 requirements for crypto monitoring?

Criteria for large systems (serving >50,000 persons) to install/maintain corrosion control treatment:	Action Level (AL) Exceedance: if exceed Pb AL of 0.015 mg/L expressed as 90 <sup>th</sup> percentile level based on samples at tap:
If 90 <sup>th</sup> percentile tap lead value minus source water lead value greater than or equal to 0.005 mg/L	<ul style="list-style-type: none"> <li>• Corrosion control treatment steps</li> <li>• Source water treatment steps</li> <li>• Public education</li> <li>• Lead service line replacement (if continue to exceed Pb AL after installing treatment)</li> </ul>



## Issue #2: Discuss optimal corrosion control requirements

- The federal regulations governing lead and copper in drinking water, which all States are required to adopt, require all large public water systems (those serving greater than 50,000 persons (Flint's population is 99,002 (2014)) to install and maintain optimal corrosion control. The federal citation (requirement) requiring optimal corrosion control treatment can be found at Title 40 Code of Federal Regulations (CFR), Subpart I, Section 141.80, paragraph (d), as follows:
  - "(d) Corrosion control treatment requirements.
  - (1) All water systems shall install and operate optimal corrosion control treatment as defined in 141.2.
  - (2) Any water system that complies with the applicable corrosion control treatment requirements specified by the State under 141.81 and 141.82 shall be deemed in compliance with the treatment requirement contained in paragraph (d)(1) of this section."
- Paragraph (1) above requires systems to have installed treatment unless they have low lead levels (defined in other parts of the rule), but based on the Flint's current 90th percentile lead level, they would not meet that criteria and must have optimal corrosion control in place. Title 40 CFR Section 141.2 defines optimal corrosion control treatment as follows:
  - "Optimal corrosion control treatment, for the purpose of subpart I of this part only, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations."
- HQ memorandum of January 10, 1992 titled, "Consecutive Systems Regulated under the National Primary Drinking Water Regulations for Lead and Copper" reinforces the position that "optimal corrosion control treatment is properly installed and maintained". Further, the LCR Short-term Revisions (2007) Preamble (starting on page 57788) states, "State notification and approval of long-term treatment changes is important because these changes could adversely impact optimal corrosion control. As EPA noted in the proposed rule, this approach allows the State to evaluate the change prior to implementation and, if needed, to design a monitoring program to ensure that optimal corrosion control is maintained after the change..... EPA will provide guidance to help systems identify source water changes (such as changing the mixture) that could impact optimal corrosion control."
- MDEQ's Policy also describes under 5.c. Change in Treatment or Addition of a New Source that "Field staff may require the water supply to conduct additional monitoring or take other actions to ensure that CCT (corrosion control treatment) remains optimized".

### Discussion Items:

- MDEQ made decision that Flint would be treated as a "new system" rather than an existing system changing their source of water. Discuss EPA (Region & HQ) interpretation of regulations that systems need to "maintain" corrosion control.
- Are there any other communities that may leave the Detroit system for other sources like Lake Huron that would be viewed as new systems or should be doing something about now to collect needed information to maintain corrosion control?

**Issue #3: Discuss Pre-flushing (as time allows)**

- Lead compliance sampling procedures in the state of Michigan comply with Federal SDWA requirements which calls for a minimum of 6 hours during which there is no water used from the tap the sample is taken from. While pre-flushing may fall within a strict legal interpretation of the regulations, we believe that it goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowner in the sample.
- Michigan is the only Region 5 State that requires pre-flushing.
- Attachment 1 provides a brief description of pre-flushing.

## Pre-flushing

The issue of pre-flushing came up regarding compliance sampling protocol used in Washington DC and was addressed by Cynthia Dougherty/OGWDW(see below/attached docs) in a letter to a resident in DC. It was not addressed in the Grumbles memo as the pre-flushing was discovered after the Grumbles memo had been written. To date, it has not been addressed on a national basis but it is one of the issues being discussed as part of the LCR Long-term revisions.

*"The purpose of the monitoring protocol is to determine if corrosion control is effective in reducing lead and copper leaching at times and locations where we would expect levels to be greatest under normal conitions. Therefore, we believe that homeowners collecting samples should use their water as they would normally, with the exception that the regulations require the water to stagnate for a minimum of six hours prior to collection of the sample."*

*"We do not understand why DC WASA believes it should be necessary to request flushing only in households participating in the sampling. While this may fall within a strict legal interpretation of the regulations, we believe that it goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowner in the sample. We will discuss this matter with their water quality manager to determine if there is a rationale that we should consider as we evaluate this issue. We also want to make sure that you are aware that we are considering additional actions we can take to further reduce lead and copper in drinking water and will be holding a stakeholder meeting on October 14-15 to initiate the effort."*

**Testing Plan, Process & Protocols**  
**DRAFT – January 27, 2016**

**Five Prong Approach to Overall Testing:**

- 1. Residential Testing coordinated by the DEQ, DHHS & the City**
  - 2. School Testing coordinated by DEQ & DLARA**
  - 3. Elevated Blood Level Testing coordinated by DEQ, DHHS & GCHD**
  - 4. Food Service Establishments coordinated by DEQ, MDARD & GCHD**
  - 5. Establishing Sentinel Sites coordinated by EPA, DEQ & the City**
- 
- 1. Residential Testing coordinated by the DEQ, DHHS & the City**
    - a. Coordination points of contact include Mike Glasgow (City), George Kristian (DEQ), Linda Dykema (DHHS)
    - b. Testing continues on a weekly basis associated with the City's drinking water distribution system
    - c. Testing is offered to all residents with an emphasis on zip codes 48503 and 48504 which were identified by Dr. Mona Hanna-Attisha as having the greatest risk for lead exposure
    - d. The DEQ Lab is EPA certified. In addition, a random set of samples will be split and samples will be tested by the EPA laboratory to ensure data integrity
    - e. Those exceeding 100 PPB are referred to DHHS for offer of wrap around services
    - f. If initial blood testing result is greater than 5 ug/dl then elevated blood level investigation ensues
    - g. In the event elevated blood lead levels are identified in the residents of the priority homes, DEQ and DHHS will partner to develop a sampling plan for additional homes adjacent to the homes of residents with elevated levels.
    - h. If a water result is greater than 15 PPB then a follow up test will be offered to see if levels are coming down and if remediative efforts are working
    - i. Residents will receive an official laboratory report, indicating whether or not lead or copper were detected in their water. Test results will be supplied through the City as well as on the [www.michigan.gov/flintwater](http://www.michigan.gov/flintwater) website
    - j. All residents are being told to continue the use of filters and bottled water until the emergency health advisory has been lifted for the city or the their area
  - 2. School Testing coordinated by DEQ & DLARA**
    - a. Coordination points of contact include George Kristian (DEQ), Shelly Edgerton (LARA) and various managers of affected schools, facilities and programs
    - b. Testing includes all public, charter and parochial schools, daycare programs, boys and girls clubs as well as facilities with at risk individuals

- c. To date, no lead service lines have been identified in the Flint Community Schools
- d. Eight teams being stood up to conduct plumbing evaluations to identify fixtures that need to be replaced
- e. Follow up action is then taken in coordination with DLARA to remove and replace all fixtures identified as needing replacement
- f. Follow up sampling is then done to ensure that remediative actions worked
- g. Sampling protocol goes way beyond the lead / copper rule and identifies sources of contamination (example: some schools have had over 250 samples taken on a single day)

**3. Elevated Blood Level (EBL) Testing coordinated by DEQ, DHHS & GCHD**

- a. Coordination point of contact includes George Kristian (DEQ), Linda Dykema (DHHS), Jim Henry (GCHD)
- b. When DHHS identifies residents with elevated blood lead levels those residents are offered a free evaluation of their home to identify potential exposure pathways of their home; these evaluations now include the addition of water testing
- c. The water testing that is done is similar to the school testing in that it is comprehensive in nature
- d. Initial samples are taken at points in the home where water is used for consumptive purposes
- e. After initial samples are taken, a series of ten consecutive one liter samples are taken to identify potential issues deeper in the plumbing
- f. In addition to the evaluations, residents are provided with information in ways to reduce exposure risks

**4. Food Service Establishments coordinated by DEQ, MDARD & GCHD**

- a. Coordination points of contact include George Kristian (DEQ), Sandra Walker (MDARD), Jim Henry (GCHD)
- b. MDARD is sending out staff to collect samples from food service establishments to see if the water being used in soft drink dispensers, ice machines, coffee machines and other similar equipment contains high levels of lead.
- c. These samples are being sent to the DEQ Lab for analysis and the reports sent back to MDARD for follow up.

**5. Establishing Sentinel Sites coordinated by EPA, DEQ & City**

- a. Coordination points of contact George Krisztian (DEQ), Jim Sygo (DEQ), Bob Kaplan (EPA), Miguel Deltoral (EPA), Mike Glasgow (City), Natasha Henderson (City), Mayor Weaver (City)
- b. There will be 200 residences identified that will serve as sentinel sites for ongoing lead and copper testing. After the initial round of testing, these sites will be resampled every two weeks for an additional four, two week

cycles. The purpose for this testing is to establish a baseline and to be able to do trend analysis to see how quickly the protective layer is being rebuilt through the supplemental phosphate that the city is adding to the water that it receives from the DWSD.

- c. After the initial round has been completed the data will be shared with all of the partners so that a consensus can be reached as to what the data means. This process will be repeated with every sampling round and areas of the city will be cleared provided that a scientific analysis of the data shows through consensus agreement that such action is warranted.
- d. It is likely that even after the city returns to a condition of compliance under the lead and copper rule that areas of concern will remain. Efforts will be made to identify these areas of concern so that additional services can be provided to identify and remediate sources of lead contamination in these isolated instances.
- e. Within sentinel testing, looking to achieve 90% of the samples at 5 PPB

Act No. 143  
Public Acts of 2015  
Approved by the Governor  
October 15, 2015  
Filed with the Secretary of State  
October 15, 2015  
EFFECTIVE DATE: October 15, 2015

**STATE OF MICHIGAN  
98TH LEGISLATURE  
REGULAR SESSION OF 2015**

Introduced by Rep. Pscholka

**ENROLLED HOUSE BILL No. 4102**

AN ACT to make, supplement, and adjust appropriations for various state departments and agencies for the fiscal years ending September 30, 2015 and September 30, 2016; to provide for the expenditure of the appropriations; and to repeal acts and parts of acts.

*The People of the State of Michigan enact:*

PART 1

LINE-ITEM APPROPRIATIONS  
FOR FISCAL YEAR 2014-2015

Sec. 101. There is appropriated for the various state departments and agencies to supplement appropriations for the fiscal year ending September 30, 2015, from the following funds:

**APPROPRIATION SUMMARY**

GROSS APPROPRIATION .....	\$	7,775,000
Total interdepartmental grants and intradepartmental transfers.....		0
ADJUSTED GROSS APPROPRIATION .....	\$	7,775,000
Total federal revenues .....		0
Total local revenues .....		0
Total private revenues.....		0
Total other state restricted revenues .....		1,000,000
State general fund/general purpose .....	\$	6,775,000

**Sec. 102. LEGISLATURE**

**(1) APPROPRIATION SUMMARY**

GROSS APPROPRIATION .....	\$	50,000
Interdepartmental grant revenues:		
Total interdepartmental grants and intradepartmental transfers.....		0
ADJUSTED GROSS APPROPRIATION .....	\$	50,000
Federal revenues:		
Total federal revenues .....		0
Special revenue funds:		
Total local revenues .....		0
Total private revenues.....		0
Total other state restricted revenues .....		0
State general fund/general purpose .....	\$	50,000

	For Fiscal Year Ending Sept. 30, 2016
GROSS APPROPRIATION .....	\$ 9,350,100
Interdepartmental grant revenues:	
Total interdepartmental grants and intradepartmental transfers.....	0
ADJUSTED GROSS APPROPRIATION.....	\$ 9,350,100
Federal revenues:	
Total federal revenues .....	0
Special revenue funds:	
Total local revenues.....	0
Total private revenues.....	0
Total other state restricted revenues .....	2,200,000
State general fund/general purpose .....	\$ 7,150,100

## **Sec. 152. DEPARTMENT OF ENVIRONMENTAL QUALITY**

### **(1) APPROPRIATION SUMMARY**

Full-time equated classified positions.....	2.0	
GROSS APPROPRIATION .....	\$ 7,300,000	
Interdepartmental grant revenues:		
Total interdepartmental grants and intradepartmental transfers.....	0	
ADJUSTED GROSS APPROPRIATION.....	\$ 7,300,000	
Federal revenues:		
Total federal revenues .....	0	
Special revenue funds:		
Total local revenues.....	0	
Total private revenues.....	0	
Total other state restricted revenues .....	1,000,000	
State general fund/general purpose .....	\$ 6,300,000	

### **(2) RESOURCE MANAGEMENT DIVISION**

Full-time equated classified positions.....	2.0	
City of Flint emergency water services.....	\$ 6,000,000	
Drinking water and environmental health—2.0 FTE positions.....	300,000	
GROSS APPROPRIATION .....	\$ 6,300,000	
Appropriated from:		
Special revenue funds:		
Settlement funds.....	1,000,000	
State general fund/general purpose .....	\$ 5,300,000	

### **(3) REMEDIATION AND DEVELOPMENT DIVISION**

Laboratory services .....	\$ 1,000,000	
GROSS APPROPRIATION .....	\$ 1,000,000	
Appropriated from:		
State general fund/general purpose .....	\$ 1,000,000	

## **Sec. 153. DEPARTMENT OF HEALTH AND HUMAN SERVICES**

### **(1) APPROPRIATION SUMMARY**

Full-time equated classified positions.....	0.0	
GROSS APPROPRIATION .....	\$ 1,850,100	
Interdepartmental grant revenues:		
Total interdepartmental grants and intradepartmental transfers.....	0	
ADJUSTED GROSS APPROPRIATION.....	\$ 1,850,100	
Federal revenues:		
Total federal revenues .....	0	
Special revenue funds:		
Total local revenues.....	0	
Total private revenues.....	0	
Total other state restricted revenues .....	1,000,000	
State general fund/general purpose .....	\$ 850,100	

### **(2) DEPARTMENTWIDE ADMINISTRATION**

Rent and state office facilities.....	\$ 100	
GROSS APPROPRIATION .....	\$ 100	
Appropriated from:		
State general fund/general purpose .....	\$ 100	



PART 2  
PROVISIONS CONCERNING APPROPRIATIONS  
FOR FISCAL YEAR 2014-2015

**GENERAL SECTIONS**

Sec. 201. In accordance with the provisions of section 30 of article IX of the state constitution of 1963, total state spending from state resources in this appropriation act for the fiscal year ending September 30, 2015 is \$7,775,000.00 and state appropriations paid to local units of government are \$0.00.

Sec. 202. The appropriations made and expenditures authorized under this act and the departments, commissions, boards, offices, and programs for which appropriations are made under this act are subject to the management and budget act, 1984 PA 431, MCL 18.1101 to 18.1594.

**DEPARTMENT OF STATE**

Sec. 301. (1) From unexpended and unencumbered funds appropriated in 2010 PA 191 for branch and central operations, \$6,000,000.00 is appropriated for a business application modernization project and shall be reappropriated for the fiscal year ending September 30, 2015 in an appropriation line entitled information technology services and projects.

(2) The funds described in subsection (1) shall remain available for expenditure to implement provisions of business application modernization ongoing costs. The unexpended funds reappropriated into the information technology services and projects line item are considered work project appropriations, and any unencumbered or unallotted funds are carried forward into the succeeding fiscal year. The following is in compliance with section 451a(1) of the management and budget act, 1984 PA 431, MCL 18.1451a:

(a) The purpose of the projects is to modernize the technical infrastructure to support the business needs of the department.

(b) The projects will be completed by contract staff and state employees.

(c) The total estimated cost of all projects is \$6,000,000.00.

(d) The tentative completion date is September 30, 2019.

Sec. 302. (1) Unexpended and unencumbered amounts of funding remaining in accounts appropriated in section 301 of 2011 PA 83, for implementation of the help America vote act of 2002, 42 USC 15031 to 15545, for the secretary of state, shall be reappropriated for the fiscal year ending September 30, 2015 in an appropriation line item entitled help America vote act.

(2) The funds described in subsection (1) shall remain available for expenditure to implement provisions of the help America vote act of 2002, 42 USC 15031 to 15545, section 37 of the Michigan election law, 1954 PA 116, MCL 168.37, and other election reforms. Consistent with the help America vote act of 2002, 42 USC 15031 to 15545, the unexpended funds reappropriated into the help America vote act line item are considered work project appropriations and any unencumbered or unallotted funds are carried forward into succeeding fiscal years. The following is in compliance with section 451a(1) of the management and budget act, 1984 PA 431, MCL 18.1451a:

(a) The purpose of the projects is to implement provisions of the help America vote act of 2002, 42 USC 15031 to 15545, section 37 of the Michigan election law, 1954 PA 116, MCL 168.37, and other election reforms.

(b) The projects will be completed by state employees, by contracts with private vendors, or by grants to local units of government.

(c) The total estimated cost of these projects is identified in each line-item appropriation.

(d) The tentative completion date for these projects is September 30, 2019.

**STATE TRANSPORTATION DEPARTMENT**

Sec. 401. Unexpended and unencumbered amounts of DOT, federal railroad administration (ARRA) funds appropriated in 2011 PA 157 for high-speed intercity passenger rail (ARRA) shall not lapse pursuant to section 451a(1) of the management and budget act, 1984 PA 431, MCL 18.1451a, but instead are reappropriated for expenditure as originally intended and are a work project meeting the following criteria:

(a) The purpose of the project to be carried forward is to preserve and invest in transportation infrastructure of the state of Michigan.

(b) The projects will be accomplished by state employees and by contract.

(c) The total estimated cost of the project is \$26,711,800.00.

(d) The tentative completion date is September 30, 2017.

Sec. 1202. The appropriations made and expenditures authorized under this act and the departments, commissions, boards, offices, and programs for which appropriations are made under this act are subject to the management and budget act, 1984 PA 431, MCL 18.1101 to 18.1594.

#### **DEPARTMENT OF ENVIRONMENTAL QUALITY**

Sec. 1251. From the funds appropriated for the city of Flint emergency water services, the department is authorized to pay up to \$6,000,000.00 for reconnection services to the Detroit water and sewerage department or its successor. The payments shall only be made once a legally executable agreement has been reached between the parties and a successful reconnection has occurred to the Flint water system. These funds are intended to pay reconnection costs through June 30, 2016.

#### **DEPARTMENT OF HEALTH AND HUMAN SERVICES**

Sec. 1301. From the funds appropriated in part 1A for Michigan rehabilitation services, the department shall allocate \$6,100,300.00, including federal matching funds, to service authorizations with accredited, community-based rehabilitation organizations for job development and other community employment-related support services.

Sec. 1302. (1) From the funds appropriated in part 1A for in-home community care programs, \$400,000.00 shall be used to expand or create new in-home care and community-based juvenile justice services to rural counties through a grant making process. Counties that received funds for the purpose described in section 587 of article X of 2013 PA 59 are not eligible to receive the funds in this section. The department shall have contracts in place for the full amount of funds for the purpose described in this section by January 15 of the current fiscal year.

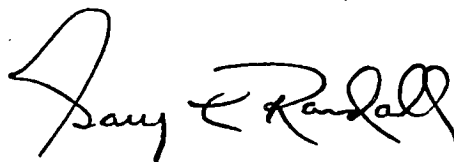
(2) By June 30 of the current fiscal year, the department shall submit a report that describes the program expansion and expenditures in detail to the senate and house appropriations subcommittees on the department budget, the senate and house fiscal agencies, and the senate and house policy offices.

#### **REPEALERS**

Enacting section 1. Sections 587 and 806 of article X of 2015 PA 84 are repealed.

Enacting section 2. Section 1069 of article VIII of 2014 PA 252 is repealed.

This act is ordered to take immediate effect.



\_\_\_\_\_  
Clerk of the House of Representatives



\_\_\_\_\_  
Secretary of the Senate

Approved .....

\_\_\_\_\_  
Governor

## **Summary of the Flint Water Issue**

Prior to 1967 the city of Flint utilized the Flint River as the primary source for the Water Treatment Plant (WTP)

The city then switched to the Detroit Water and Sewer Department (DWSD) as the primary source for drinking water. The water supplied by DWSD was finished water and went directly to the city of Flint's distribution system.

The city of Flint maintained the Flint River as an emergency backup. The city ran the WTP on a quarterly basis to maintain operational capabilities. Testing of the water at the plant did not reveal any issues with respect to meeting the water quality standards of the Safe Drinking Water Act (SDWA).

In January of 2006 initial discussions began regarding the creation of the Keregnondi Water Authority (KWA)

In April of 2013 Flint notified the DWSD of their intent to join the Karegnondi Water Authority. In response the DWSD set a termination date of April 17, 2014.

Since there was not enough time for KWA to come online before the termination date, the city of Flint notified the DEQ of their intent to use the Flint River as the primary source of water until the KWA went online. In May of 2014 the city of Flint began using the Flint River as the primary source for drinking water.

In August and September of 2014 the city issued localized boil water notices based on bacteriological testing results.

During Late 2014 and early 2015 the city of Flint experienced disinfection byproduct violations. In response, the city implemented the use of Granular Activated Carbon filtration in order to address the issue.

Based on an interpretation of the lead and copper rule, DEQ staff instructed the city of Flint to conduct two consecutive 6 month rounds of testing to demonstrate acceptable corrosion control in lieu of having the city implement corrosion control treatment immediately. The first 6 month round of testing showed a 90<sup>th</sup> percentile value of 6 ppb the second 6 month round of testing yielded a 90<sup>th</sup> percentile value of 11 ppb. In response to these results DEQ staff instructed the city of Flint to implement corrosion control treatment.

After the City of Flint switched over to the Flint River, there was an increase in the number of complaints from residents regarding color, odor and taste issues with the water. As a result of these complaints researchers from Virginia Tech came to investigate and found elevated levels of lead in the water. Concurrent to that investigation, researchers at Hurley Medical Center found an increase in the incidence of Elevated Blood Lead Levels in young children. The researchers at Hurley then

correlated the increase in blood lead levels with the increase in lead in drinking water that occurred subsequent to the switch to the Flint River as the drinking water source.

On September 25, 2015 the city of Flint issued a lead advisory regarding drinking water. A week later the State Chief Medical Officer confirmed the Hurley findings and the Genesee County Health Department issued a "Do Not Drink" advisory.

On October 2, 2015 the GCHD in conjunction with the DEQ did preliminary screening of the facilities in the Flint Community Schools System. The results of this screening showed that there were lead issues in the schools that required further investigation. The schools were instructed to cease use of drinking fountains and faucets for consumptive purposes while a more detailed investigation could be conducted.

On October 16, 2015 the city of Flint switched back to using water from DWSD as their source. Due to the use of the Flint River water the city was instructed to implement supplemental phosphate addition to assist in rebuilding the protective layer in the distribution system. On December 9, 2015 the city finished installing the equipment and supplemental phosphate addition began.

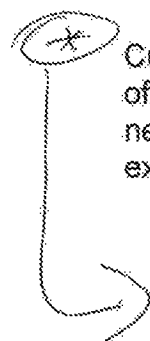
On October 24, 2015 the DEQ in conjunction with LARA began conducting plumbing evaluations of the Flint Community Schools. The results so far show that although the primary source of lead leaching into the water is coming from fixtures such as faucets and fountain heads, the results are in some cases ~~are~~ very concerning with values exceeding 100 ppb. On December 29, 2015 the last of the Flint Community Schools were sampled and the results are pending. The results of these plumbing evaluations show that a significant portion of the fixtures will need to be replaced in order to bring the lead concentrations in the water down below the EPA Action level of 15 ppb.

The primary sources of lead contamination in the Flint water supply comes from older fixtures, older solder used for copper pipes in the homes and lead service lines. Lead service lines that have had the protective coating stripped away can contribute very high levels of lead. In addition, construction near to lead service lines can also cause particulate lead to dislodge and potentially be consumed. Even with optimized corrosion controls in place, these sources of lead can still leach into the water. The use of corrosion control simply slows but does not arrest the leaching process.

Due to these reasons, the lead service lines in the city of Flint need to be replaced. A program for lead line replacement should be implemented and should be done in concert with other infrastructure projects where feasible. Homes with children that have elevated blood lead levels need to be given top priority and then system devised to address the order of lead service line replacement.

*Shawn and  
Liz 1/2/15?*

*ca*



Current estimates are that there are approximately 15,000 lead service lines in the city of Flint. The replacement of all of the lines is not feasible in one year and a schedule needs to be developed that takes all factors into consideration so that this can be done expeditiously and systematically.

**What are some of the key things that are needed?**

*and  
response*

Funding for lead service line replacement

Funding for the continued use of the DWSD until the KWA is fully online

Funding for the creation of a lead testing program for all schools in the state of Michigan

Funding for the creation of educational programs that can assist parents on how to deal with lead exposure through nutrition and other measures

Funding for the creation of a program to assist with the educational needs of children suffering from lead exposure

*Increase support for nutritional assistance  
Early childhood*

*Close integration of all public Infrastructure  
Projects eg roads, water, sewer*

*Increase capacity ? of VERIFICATION*

*INTERIM MEASURES @ SHOULD BE TAKEN  
TO MINIMIZE*

# **DEQ's 18 Point Partnering Plan**

## **1. After Action Plan (FAQ) will be ready by noon November 16, 2015**

- First version complete – updated as needed

## **2. School Test Data**

- School reports to be expedited
- Steve Busch creates summary reports
- George Krisztian creates summary spreadsheet

## **3. Blood exposure**

- DHHS is lead on providing data

## **4. Meeting with Mayor Karen Weaver**

- Harvey Hollins lead – Dan Wyant, Jim Sygo and George Krisztian to attend

## **5. Messaging our Partnering Plan**

- Provide ongoing public updates regarding Governor's 10 point plan
- Continue emphasis on the availability of free testing for Flint residents
- OEA to direct the Public to the "Flintwater" website

## **6. Sampling Protocol**

- Establish alignment with EPA Region 5 on sampling protocol

## **7. Lead service line replacement**

- Expand RLF directed at lead service line replacement
- Amy Epkey, Maggie Pallone and Sonya Butler

## **8. Partner with EPA**

- Jim Sygo → Bob Kaplan
- Dan Wyant → Susan Hedman
- Mike Prysby and Steve Busch → Darren Lytle and Mike Schock
- George Krisztian → Tom Burke
- ODWMA Staff → EPA Region 5 Staff (Jennifer Crooks and Tom Poy)

## **9. Meet with Mott Foundation to discuss Lead Service Line Identification Study**

## **10. Lead Education Program**

- DHHS is the lead on Lead Education Program

**11. Moving KWA forward**

- Proactive meetings with KWA

**12. Participate actively with Technical Advisory Council**

**13. Utilize Joan Rose and MSU water expertise**

**14. Public Outreach**

- Mayor Karen Weaver
- Genesee County Health Department
- Drs. Lawrence Reynolds, Eden Wells and Matthew Davis
- Ministers
- Land Bank
- Legislators
- Citizens

**15. Outreach to schools**

- EPA guidance on testing
- Work with state superintendent
- ODWMA Staff to work on Literature

**16. Make recommendations to EPA about LCR**

**17. Compliance Communication letter sent November 9, 2015**

- Wait until after Dec 30<sup>th</sup>

**18. Enhance Coordination with Health Officials regarding personal health notifications of drinking water issues.**

**Senior Management Team Meeting**  
**Monday, October 5, 2015**  
**8:30 a.m. – 10:00 a.m.**  
**Great Lakes Conference Room**  
**AGENDA**

Call-In No. for District Coordinators: 1-877-873-8018; Access Code: 3467059#

**Director's Report**

**In-Depth Discussions:**

- City of Flint Drinking Water (Director)

**Chief Deputy Director's Report**

**Discussion and Future SMT Meeting Agenda Items**

Next SMT Meeting: Monday, October 19, 2015

**Future Items of Discussion:**

Budget  
Long Term Funding  
Organizational Excellence  
Engagement  
Communication Issues

1) ASKING FOR  
A PLAN

2)



## **Sobieski, Sue (DNR)**

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**From:** Hagler, Gary (DNR)  
**Sent:** Thursday, January 28, 2016 1:09 PM  
**To:** Lord, Daniel (DNR)  
**Cc:** Feighner, Bryce (DEQ); Benzie, Richard (DEQ); Krisztian, George (DEQ); Sobieski, Sue (DNR)  
**Subject:** RE: Any Additional Items need for Tommorrow, Thur5sday 1/28/16  
**Importance:** High

Dan,

We need an update on date, time and location for the required attendees for the below attached meetings. Please reply all on this email once you have the details.

Thanks:  
GH

Gary Hagler  
Law Enforcement Division, Chief  
Michigan Department of Natural Resources

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**From:** Lord, Daniel (DNR)  
**Sent:** Wednesday, January 27, 2016 2:20 PM  
**To:** Hagler, Gary (DNR)  
**Cc:** Creagh, Keith (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Krisztian, George (DEQ)  
**Subject:** Re: Any Additional Items need for Tommorrow, Thur5sday 1/28/16

Gary,  
Two items for the team to consider & identify:

- Technical staff to have a follow up meeting with EPA science based team sometime this week or early next week (Bob Kaplan from EPA to provide a date & time). Suggestions from Jim & George: DEQ staff Mike Prizbee, Bryce Feigner, Jon Bloemker
- Additional DEQ resource staff in the room in Friday's City meeting to speak to the KWA system; from Keith, "we need the right expertise in the room".

Other than that we're in good shape. Thank you for the continued support.

Dan Lord  
Finance and Operations Division  
Michigan Department of Natural Resources  
525 West Allegan Street  
PO Box 30257, Lansing, MI, 30028  
Office: 517.284.5963  
Cell: 517.290.5603

On Jan 27, 2016, at 1:55 PM, Hagler, Gary (DNR) <HAGLERG@michigan.gov> wrote:

Dan,

Please check with Director Creagh and determine if there are any additional high-priority focus items he needs us to work on for tomorrow, other than those we already have received from him including additional items for upcoming meetings etc. We will be having a pre-planning meeting at 2:30pm and the full planning meeting at 3:30pm to develop the Incident Action Plan for tomorrow.

Thanks,

Gary Hagler  
Law Enforcement Division, Chief  
Michigan Department of Natural Resources

**City of Flint, Michigan**  
**Office of the City Administrator**

# Memo

**To:** Dayne Walling, Mayor

**From:** Natasha L. Henderson, City Administrator *N.L.H.*

**cc:** President Freeman and Councilmembers

**Date:** October 20, 2015

**Re:** Water Filtration Plant and Water Distribution Internal Review

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## Water Filtration Plant and Water Distribution Systems Overview

The City of Flint's water filtration plant and distribution system have experienced many challenges over the past two years and it is of grave concern that we reflect upon the decisions that have been made and understand how we will proceed in the future. First, and foremost the City will conduct an internal review of the steps that were taken in 2013 when the agreement with Karegnondi Water Authority (KWA) was signed.

In the wake of recent water concerns, I have developed a proactive and comprehensive plan showing the City's commitment to deliver high quality water, address its aging infrastructure, and maintain a qualified staff. I am outlining a series of steps that the city will take to not only ensure that these goals are met but a plan that is designed to start rebuilding community trust through action and transparency.

In addition, with the assistance of the EPA Task Force, Michigan Department of Environmental Quality, and Safe Drinking Water Technical Advisory Committee, the following steps are meant to go into effect as quickly as possible with all goals being accomplished by the time KWA begins delivering raw water.

- Independent review
- Processes & Testing
- Training

- Technology
- Communication
- Lead Lines
- Capital Improvements

### **Independent Review**

We will seek to commission an independent source to review the technical and operational steps that occurred from the time the City signed on to the KWA to present. This is meant to internally perform an after action review in order to clearly assess the decisions that were made. My expectation is that we will hire out-side legal counsel to lead this internal review. I believe it is imperative that the City has all information that has led the City to the water quality issues that have arisen.

### **Internal Processes & Testing**

We understand that EPA standards are the minimum requirements that utility systems are required to meet, the City will establish and move forward with higher standards and goals than those set by regulators. As these new standards are set, they will be published with a plan on how to obtain each goal complete with expected timeframes. The following are the first set of goals that have been set by the City that exceed the regulatory requirements.

<b>Regulatory Requirements</b>	<b>City Goals</b>
(1) F-1 Licenced Personnel	(2) F-1 Licenced Personnel
(1) S-1 Licensed Personnel	(2) S-1 Licensed Personnel
100 TTHM Samples per Month	120 TTHM Samples per Month
100 Lead/Copper Volunteer Samples / yr.	300 Lead/Copper Volunteer Samples / yr.
Annual Water Quality Report	Quarterly Water Report

### **Training**

We will encourage all utility employees to become members of the American Water Works Association (AWWA) which is the largest nonprofit, scientific and educational association dedicated to managing and treating water. The AWWA offers continual training opportunities and the City will develop an internal training regimen that employees must adhere to. The goal is to continue to develop each employee which promotes a long term succession plan.

### **Technology**

The addition of enhanced Supervisory Control and Data Acquisition (SCADA) will make sure that the system is running with the industries most updated technology and running as efficient as possible. The SCADA adds automation to the Water Plant thereby reducing the need for as much manual intervention. The City will also maintain Safe Drinking Water Technical Advisory Committee with more consistent meetings.

### **Enhanced Communication**

We recognize that one of the key features of a Utility is the public communication with honest and candid information. We will increase the way we send information to people and the frequency that our communication is available. The following are first steps in that direction.

- Monitors around City Hall that display information about the water system

- Direct emails to individuals and neighborhood groups informing people where work is occurring
- Door hangers for field workers to distribute alerting people when water may be off or discolored
- A website page and GIS map dedicated to water events
- Quarterly Water reports that are directly mailed to users
- More frequent press releases that provide information relating to infrastructure concerns
- Immediate notification using all of the above media if a violation occurs
- An answering service so that every call is answered in a timely manor

### **Lead Service Lines**

Every effort will be made to ensure a program will be in place to address the long-term goal of replacing all lead service lines. The program is expected to address the location of all City owned lead service lines and look to provide an opportunity for homeowners to receive a grant in order to have their service line changed at the same time as the city is changing its lines. This coordinated program will look to utilize funds from multiple avenues to support City residents, such as:

- CDBG Funds
- DWRP revolving loan funding
- Grant funding

### **Capital Improvement Plan**

The City will continue to modify its 5-year CIP annually to make sure that we are always addressing the most critical issues facing the City. Another rate study will help set the correct rate for the system and determine the proper allocation to address concerns. The Water Reliability Study will continue to highlight the critical needs and will continue to be updated every two years.

**As City Administrator, my goal is to ensure all of the necessary steps are in place prior to the implementation of KWA delivering water to the City. All of these initiatives will be inserted into the Utilities strategic plan and tracked regularly by staff, myself, and reported to the DPW Committee to ensure accountability.**

11/25/15

3

# Lead in Drinking Water

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## Preliminary Assessment

U.S. EPA Flint Task Force

12/22/2015

DRAFT

## **1.0 Overview**

The United States Environmental Protection Agency (EPA) has offered, and the City of Flint has accepted, the assistance of EPA experts on corrosion and corrosion control. This preliminary assessment is intended to document the activities and funding necessary to enable EPA to provide advice and support to the City of Flint in optimizing and maintaining corrosion control treatment under current water quality conditions as well as during and after the upcoming transition to the Karegnondi Water Authority (KWA) pipeline.

[Note: There are many other communities scheduled to transition from their current water sources to the KWA pipeline. Although the source water will be the same for the City of Flint and all communities transitioning to the KWA pipeline source, the intended treatment planned for these communities may differ and the studies undertaken for the City of Flint may or may not be suitable for use by the other communities. It is strongly recommended that the EPA Task Force discuss with the Michigan Department of Environmental Management (MDEQ) the importance of actively working with these additional communities to ensure that proper studies on optimizing and maintaining OCCT are undertaken prior to putting the new KWA source in service for all affected communities. If such studies are not currently underway, they should be initiated as soon as possible.]

## **2.0 Information Request**

In order to provide effective advice and assistance, the EPA Task Force should request the following information from the City of Flint.

### **2.1 Current inventory of homes with service line information in excel or similar format.**

Pipe loops are corrosion control treatment assessment tools that enable evaluation of the effects of potential water quality changes and different levels of orthophosphate treatment on the existing pipe scales in order to select the most effective treatment before the treatment is applied on a city-wide basis. The pipe loops utilize lead service lines that are actively in service and carefully extracted so that the treatment assessment is conducted with pipes that represent conditions within the distribution system. As it would not be possible to perform service line extractions in the winter without significantly altering or dislodging the scales within the pipes, the identification and extraction of lead service lines should be given the highest priority to ensure that a sufficient number of lead pipes can be identified and extracted as soon as possible. In order to identify suitable homes with lead lines, the EPA Task Force will need current records on lead service line locations to be provided as soon as possible so that sampling can be coordinated and conducted to verify the presence of lead lines.

To minimize the need for excavation, homes with the longest lead service lines should be chosen so that multiple segments can be harvested from each lead line. The lead lines would typically be the longest where the water main is located across the street from the home and the home is set back on the property with respect to the street. An estimated 20 lead pipe segments should be carefully extracted and handled using ORD-specified procedures for use in constructing pipe loops at the treatment plant.

As the scales within the service lines have been subject to significant and iterative water quality changes in a relatively short period of time, it is also necessary to extract additional lead and non-lead portions of service lines to assess the current condition of the scales within the service lines.

2.2 All lead in water testing results for City of Flint, including those not used for Lead and Copper Rule compliance.

Studies have shown that homes served by lead service lines generally have much higher lead levels than homes without lead service lines. As it is anticipated that the City of Flint's service line records will be incomplete, the lead-in-water testing data is a supplemental tool that can be mapped to identify areas of the city that may have higher lead-in-water levels which would indicate the presence of lead service lines. This information will help the EPA Task Force in the identification and extraction of lead service lines for constructing the pipe loops and in identification of areas to test the progress of corrosion control.

2.3 Identification of areas in Flint with elevated blood lead levels.

Similar to the lead-in-water testing, identification of areas (e.g., zip codes, neighborhoods) where elevated blood lead levels are found can provide additional data which would indicate the presence of lead service lines for the identification of areas to test the progress of corrosion control.

2.4 Addresses of homes that have had water service interruptions or street disturbances (e.g., water main breaks, road/sidewalk construction, etc.) within the last year.

Streets where there have been potential physical disturbances and homes where the water service has been interrupted should be prioritized for evaluation for the presence of lead service lines as the disturbances can release very high lead and prolonged stagnation can affect the stability of the scales within the pipes.

2.5 Addresses of currently unoccupied homes.

Similar to homes where the water service has been interrupted, homes that are unoccupied should be prioritized for evaluation for the presence of lead service lines as these homes may pose a significant risk to incoming occupants if the home has a lead service line. Recently unoccupied homes also may provide important evaluation locations of water usage impacts on scale stability and lead release/exposure.

2.6 Identification of the pressure zones and location of each of the water quality parameter locations (addresses) within each pressure zone used for water quality parameter measurements (pH, alkalinity, orthophosphate, chlorine, total Coliform) in the distribution system, along with copies of the water quality parameter analytical results for past 4 rounds of monitoring.

In addition to corrosion control treatment optimization, the City of Flint must simultaneously comply with all other applicable National Primary Drinking Water Regulations (NPDWRs). A system-wide assessment of the water quality will provide information necessary to ensure that any potential issues with other NPDWRs can be identified and resolved. Information regarding the water quality in the distribution system is necessary to evaluate the stability of the water quality parameters throughout the distribution system, and to detect locations that may have the highest risk of lead release, TTHM formation, or the presence of microbial contamination.



### **3.0 Immediate Tasks and Timeline**

The following tasks should be undertaken immediately (November/December 2015)

3.1 Determination on EPA funding commitment(s) (DRA).

3.2 Discussion with Central Regional Laboratory (CRL) regarding laboratory capabilities and support (GWDWB, ORD).

3.3 Development of EPA QAPPs encompassing the following activities (GWDWB, ORD, Others\*):

- 3.3.1 Verification of presence of lead service lines\*;
- 3.3.2 Pipe rig construction, operation, and maintenance;
- 3.3.3 Treatment assessment monitoring;
- 3.3.4 Evaluation of lead reservoirs within service lines; and
- 3.3.5 Evaluation of scale degradation due to stagnation events at unoccupied homes and water shut-offs\*.

\*If these activities are undertaken by one or more of the local partners, QAPP development should be part of the agreement.

3.4 Identification of local partners that can coordinate with the EPA Flint Task Force, MDEQ, and the City of Flint, and establishment of agreements to provide assistance on field and other activities (ORD).

[Potential local partners who have expressed strong interest and willingness to collaborate with EPA include Wayne State University, University of Michigan Flint, Michigan State University, Hurley Medical Center, and Genesee County Health Department.]

3.5 Outreach and education – specifics to be determined.

[Potential local partners Hurley and WSU have asked ORD directly if EPA can provide training/education for their staff on lead in water occurrence, sampling for lead, and corrosion/corrosion control treatment]

3.6 Assessment of information from 2.1 to verify the presence of a sufficient number of accessible homes with lead service lines that can be extracted for construction of pipe loops and to evaluate the current state and stability of the scales within the lead and non-lead portions of service lines (TBD).

3.7 Extraction of approximately twenty lead line segments with active water for construction of pipe loops, and six additional full service lines with different pipe material (two with lead and galvanized iron, two with lead and copper, and two with lead and plastic segments) for analyzing the lead reservoirs within the lead and non-lead segments of the service lines (TBD).

3.8 Risk evaluation and communication on the potential risk from physical disturbances to lead service lines, reoccupation of unoccupied homes and re-establishment of water service following water shut-offs (TBD).

#### **4.0 Funding Needs (To Be Determined)**

#### **5.0 Optimization and Maintenance of Optimal Corrosion Control Treatment**

The narrative below describes the scope of work to be undertaken in providing assistance to the City of Flint and is contingent on adequate funding being provided.

##### **5.1 Lead Service Line Detection Methodology Development**

Verification of the presence of lead service lines is necessary for identification and extraction of lead service lines, sampling for treatment assessment, Lead and Copper Rule compliance sampling, risk evaluation and implementation of a lead service line replacement program. Blood lead level (BLL) or other lead-related health evaluations also need to be able to identify all lead sources for blood-tested individuals to prioritize risk locations and mitigation strategies. This methodology development is designed to determine if a simple water sampling protocol can give a convenient means to verify with some level of confidence, whether or not a residence has a lead service line, through relatively non-intrusive water sampling. Experience with other utilities has shown that paper records may either under or overestimate the presence of lead service lines.

The strategy to be employed is based on published protocols with improvements being researched by Polytechnique Montreal (Michele Prevost, Elise Deshommes, Clement Cartier). This requires staffing for coordination with Flint paper records, resident contact, plumbing mapping, field sampling (TBD, but estimated at 20 locations with no LSLs for “control” purposes, and 50 locations believed to have LSL for validation. Development of this protocol could involve re-sampling to test techniques, and could utilize one or more Palintest electrochemical analyzers after validation vs. ICP-MS. EPA-ORD has one Palintest analyzer which can be used. Field personnel would work closely with R5 CRL to test the limits of analytical performance of the Palintest analyzer.

[Note: Verification of the locations of lead service lines for compliance sampling and for corrosion control treatment assessment is a best practice for all systems.]

##### **5.2 Corrosion Control Treatment Optimization Evaluations**

The corrosion control treatment optimization evaluations are necessarily separated into two stages. The first stage is intended to optimize corrosion control treatment with the current water source and water quality conditions. The second stage is designed to prepare for the transition to the new water source (KWA Pipeline) and water quality conditions, and to ensure that the City of Flint is able to simultaneously comply with all National Primary Drinking Water Regulations following the transition to the new source.

**5.2.1 Short-Term (Current) Lead Release Optimization Evaluation.** A lead pipe rig system will be constructed at the Flint water treatment plant with exhumed lead pipes, carefully collected and installed into the pipe rig (see example pipe rig schematic in appendix). EPA-ORD will provide technical assistance in the rig design and construction, as well as the design provisions for chemical additions. One to two people will be required to be on-site to perform periodic chemical analyses and operate and maintain the pipe rig system, as well as to troubleshoot/repair any problems and to collect samples. Laboratory

instruments for pH and colorimetric tests (chlorine residual, orthophosphate) will be needed on site. It is anticipated that the design will include a “control” loop and loops with possibly 3-4 different dosages, in duplicate. The estimated sampling frequency would be at least three times per week, using ICP for metals and ICP-MS for lead on each sample, with one complete characterization sample before each stagnation period. Filtration apparatus will also be needed.

*5.2.2 Simultaneous Compliance Optimization Pilot Testing Prior to Flint Water Plant Treatment of KWA Water.* This effort will necessarily be more expansive than the short-term evaluation. The same control pipes would carry over, but new pipes would need to be stabilized with the current water. Upstream of the lead pipe rig, there would need to be a series of jar tests or a small pilot plant established to optimize coagulation, softening (if necessary), filtration and disinfection processes to meet disinfection byproduct (DBP) limits and microbial inactivation requirements. Investigations are also needed to assess the potential impacts of different possible treated Lake Huron water qualities on chlorine, biofilm growth, water age, microbial pathogens such as *Legionella*, phosphate demand and scaling potential. Pilot evaluations could be done on different unit processes using anticipated Lake Huron water, using university-run pilot plants, shipped or trucked water, etc. Some pilot evaluation analyses could be done on-site with portable analytical instrumentation as is typical. When a final water quality target is determined, the target finished water would become the source water to feed into the lead (and metal) pipe rigs, and thereafter the optimization of phosphate dosing would be done on the stabilized exhumed lead pipes in the pipe rigs. A reservoir may need to be constructed to hold processed simulated Lake Huron treated water produced by the pilot plant and fed to the pipe rigs. This evaluation must be started as soon as possible to allow sufficient time for reliable results to avoid having to conduct full-scale testing on water delivered into the distribution system that could impact Flint consumers after the switch to the KWA pipeline is made.

[Note: Evaluation of Corrosion control treatment optimization using a pipe rig is a best practice for all systems changing sources/treatment.]

### 5.3 Lead Source/Release Diagnostic Evaluation

While the data collected from the pipe loops can provide information on the relative effectiveness of various treatment schemes, conditions at the plant are not the same as within the distribution system. Continued monitoring of lead levels at high risk sites throughout the distribution system is needed to make any necessary adjustments based on actual conditions within the distribution system. EPA estimates that approximately 45 homes will need to be identified for ongoing sampling to inform the treatment optimization process. (15 with lead & copper service line portions, 15 with lead & galvanized iron service lines and if available, 15 with lead and plastic service line portions). This evaluation is necessary for determining what the relative contributions of lead are from different plumbing sources in order to assure optimization of lead and other metal release from the service lines and premise plumbing. Two sampling rounds are the minimum expected for profile sampling which will utilize small volume samples through faucet and sink area and larger (one-liter) samples thereafter.

Sampling would involve 15 sites for each combination of plumbing materials (total of 45 sites), with an anticipated 10-15 sequential samples per site for metals per sampling event. Additional samples will be collected and analyzed to characterize the water quality and the sequential samples will be analyzed for Pb, Cu, Fe, Zn, and Al. An experienced plumber or researcher will be needed to map the plumbing at each site, field personnel will be needed to collect and ship samples, and a data manager will be needed to manage the data. If dissolved vs. total metals are desired in the analyses, an additional person with field filtration skills will be needed, in addition to the lab supplies. If meters, brass or galvanized pipe are found to be a significant source of lead, those devices should be included in the pipe rigs.

[Note: Monitoring of lead levels at high risk sites throughout the distribution system to make any necessary corrosion control treatment adjustments is a best practice for all systems changing sources/treatment.]

#### 5.4 Pipe analyses for long-term treatment assessment and mechanisms of lead and other metals release

Optimization of corrosion control treatment requires specialized knowledge on scale chemistry as well as specialized equipment and equipment operating skills. The timeline for activities related to evaluating the progress in optimizing corrosion control treatment following the transition to the KWA pipeline source will extend beyond the current fiscal year and likely well into FY 2017. The necessary resources and expertise must continue to be made available to the Task Force for the expected duration of the project in order to ensure a successful outcome which would enable the City of Flint to simultaneously comply with all NPDWRs following the transition to the KWA pipeline.

[Note: Long-term evaluation of corrosion control treatment effectiveness is a best practice for all systems.]

#### 6.0 Additional Recommendations and Needs

[Note: The additional recommendations in the Section 6.1 and 6.2 are advisable for all systems with lead service lines. The recommendation in Section 6.3 is specific to Flint.]

##### 6.1 Impact of Water Use/House Occupancy on Stability and Lead Release from Lead and Other Premise Piping.

There are a large number of unoccupied homes in Flint. Homes which have been unoccupied for an extended period of time can pose a greater risk to incoming residents due to the stagnation of water within the plumbing over an extended period of time which can destabilize the scales within the plumbing and release high lead levels into the water. If access can be facilitated by the City of Flint or other organizations involved with housing, sampling will be conducted at 10-20 vacant or recently occupied homes in conjunction with a flushing program to assess how long it takes for increased water usage to improve the effectiveness of the corrosion control treatment for these homes. Sequential sampling profiles would be done for metals as well as chlorine residuals for each home. Flushing for different times would be tested and evaluated with

repeated profile sampling to see if there is any improvement in lowering lead levels with increased water use.

#### 6.2 Protocol for Exposure Estimation Sampling for Health-Related Evaluations (Premise & Building Plumbing).

This protocol development would compare various potential options for sampling to estimate the cumulative metal exposure from the drinking water in premise plumbing or schools.

Comparisons would be made with manual or automated proportional sampling, tap POU units that could log water use and be disassembled and digested for metal content, and random daytime sampling protocols. Different types of POU-suitable filtration apparatus would be tested to see if designs would permit quantitative separation of dissolved versus particulate lead and other metals. Support would be needed for setting up and operating test systems, analyzing virgin and exposed filter/device materials with accumulated metals, building and installation of proportional samplers or development of protocol for resident-collected samples, rapid turn-around Lead and other water analyses of test exposure water fed into experimental systems.

#### 6.3 Risk communication on lead service lines

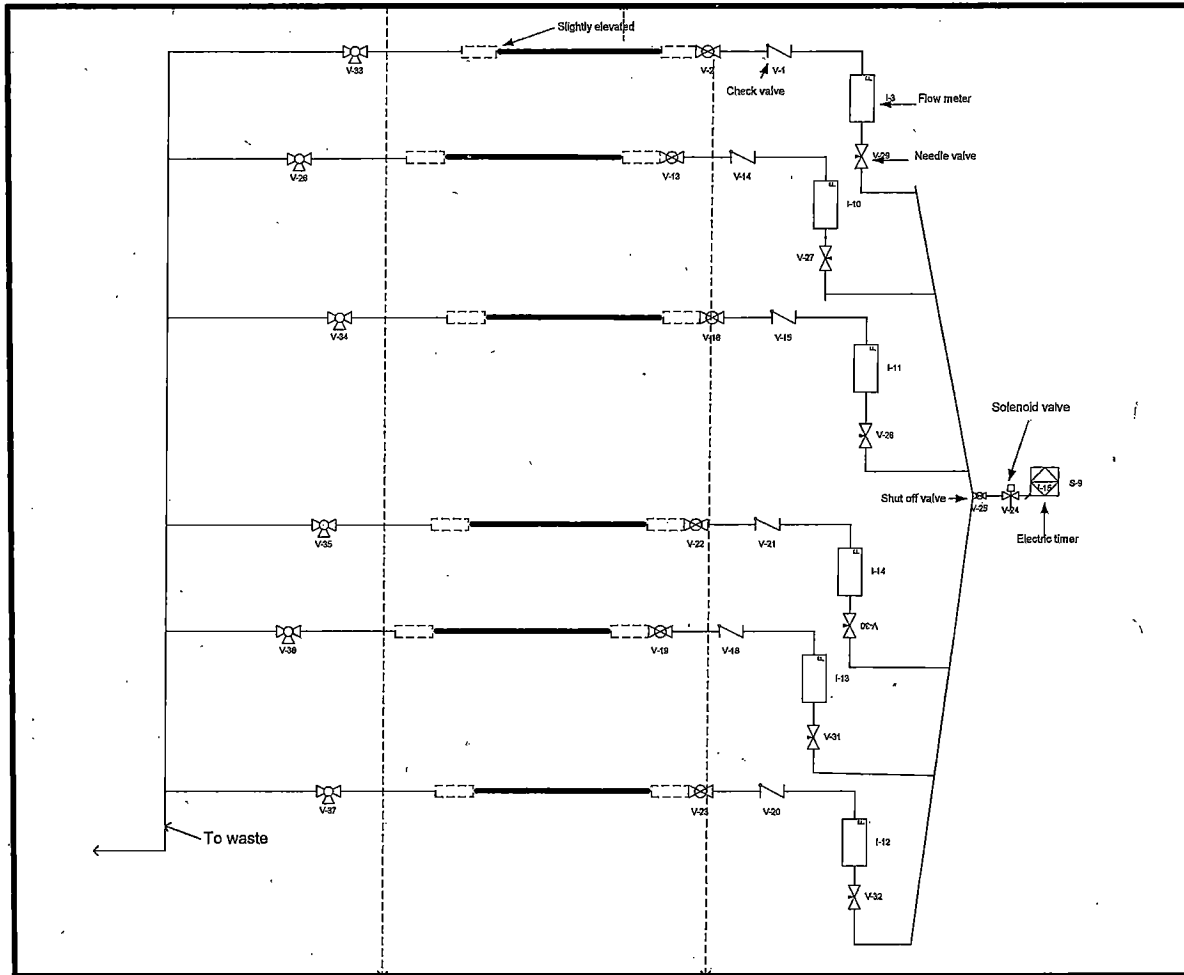
Request OEJ support/assistance for the development and dissemination of risk communication material on lead service lines, including the potential risk from physical disturbances to lead service lines and lead reservoirs in other pipes downstream of lead service lines.

#### 7.0 Timeline

The proposed activities are contingent upon available funding. As such, it is not possible at this time to develop a meaningful timeline, with the exception of the activities in Section 2.0 and some of the activities in Section 3.0 which are discussed in those sections. Once funding is secured a detailed timeline will be developed that incorporates both funded and unfunded activities. A Task Force member will be identified as the lead person responsible for ensuring the completion of each activity or group of activities to ensure that the work is completed in accordance with the timeline.

APPENDIX

**Schematic of Lead pipe rig (6 lead sections) from single water source**



Shown above are 6 lead sections with a single water source. All are attached to a unistrut framework with casters. Water flows in a single pass through the pipes to waste. The source water can be turned off/on using a timer-controlled solenoid valve.

## Flint Drinking Water Action Plan Update

### FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGE

- Weekly internal After Action Plan meetings are being held. The topics of discussion for the meeting held on October 29 included a status update of the time line of events. It was agreed that a long-term comprehensive time line needed to be created, but an outline written at a higher level was needed within the next week to present to the Governor's After Action Review Panel. Additional discussion topics included an internal evaluation of the Safe Drinking Water Act, 1976 PA 399, as amended, as well as the federal lead and copper rule to determine what, if any, actions were implemented incorrectly.
- Negotiations between the Genesee County Health Department (GCHD) and the DEQ have begun to set up a contract to utilize GCHD resources to conduct sampling of schools within the Flint Community Schools as well as parochial schools, charter schools, and childcare facilities.
- The final draft of the school sampling protocol has been written and is awaiting final review. This version of the protocol incorporates comments by the EPA and will be used to sample at Eisenhower Elementary School and Brownell K-2 STEM Academy on Saturday October 31. Experiences from the sampling of Freeman Elementary School on Saturday October 24, were used to create the final draft, and experiences from Eisenhower and Brownell will be used to determine if any further changes are required.

Prepared by: George Krisztian, Flint Action Plan Coordinator  
Laboratory Director  
Department of Environmental Quality  
Telephone: 517-284-6719  
Cell: PPI  
October 30, 2015

## **Department of Environmental Quality 18-Point Partnering Plan**

- 1. After Action Plan Frequently Asked Questions will be ready by noon on November 16, 2015**
  - First version complete – updated as needed
- 2. School test data**
  - School reports to be expedited
  - Steve Busch creates summary reports
  - George Krisztian creates summary spreadsheets
- 3. Blood exposure**
  - DHHS is lead on providing data
- 4. Meeting with Mayor Karen Weaver**
  - Harvey Hollins lead – Dan Wyant, Jim Sygo, and George Krisztian to attend
- 5. Messaging our Partnering Plan**
  - Provide ongoing public updates regarding Governor's 10-point plan
  - Continue emphasis on the availability of free testing for Flint residents
  - DEQ's Office of Environmental Assistance to direct the public to the Flint water Web site: [www.mi.gov/flintwater](http://www.mi.gov/flintwater)
- 6. Sampling Protocol**
  - Establish alignment with the U.S. Environmental Protection Agency (EPA), Region 5, on sampling protocol
- 7. Lead service line replacement**
  - Expand the Revolving Loan Fund directed at lead service line replacement
  - Amy Epkey, Maggie Pallone, and Sonya Butler



**8. Partner with EPA**

- Dan Wyant → Susan Hedman
- Jim Sygo → Bob Kaplan
- Mike Prysby and Steve Busch → Darren Lytle and Mike Schock
- George Krisztian → Tom Burke
- DEQ's Office of Drinking Water and Municipal Assistance (ODWMA) staff → EPA, Region 5, staff (Jennifer Crooks and Tom Poy)

**9. Meet with Charles Stewart Mott Foundation to discuss Lead Service Line Identification Study**

**10. Lead Education Program**

- DHHS is the lead on Lead Education Program

**11. Moving Karegnondi Water Authority (KWA) forward**

- Proactive meetings with KWA

**12. Participate actively with Flint Technical Advisory Council**

**13. Utilize Joan Rose and Michigan State University water expertise**

**14. Public outreach**

- Flint Mayor Karen Weaver
- Genesee County Health Department
- Drs. Lawrence Reynolds, Eden Wells, and Matthew Davis
- Ministers
- Land Bank
- Legislators
- Citizens

**15. Outreach to schools**

- EPA guidance on testing
- Work with State Superintendent Brian Whiston
- ODWMA staff to work on literature

**16. Make recommendations to EPA about Lead and Copper Rule**

**17. Compliance Communication letter sent on November 9, 2015**

- Wait until after December 30, 2015

18. Enhance coordination with health officials regarding personal health notifications of drinking water issues

- Media
- City of Flint and surrounding communities

#### Partner outreach

Nov. 9

- Conference call – a.m.
  - Superintendent and school principals
  - Genesee County Health Department
  - Legislators, including Sen. Ananich, Congressman Kildee, Rep. Neeley and Rep. Phelps

#### Media outreach

Nov. 9

- Press release issued to DEQ's distribution list, which includes slightly more than 3,000 subscribers.

#### Social media

Nov. 9

DEQ Twitter

- Video news release – around noon
- Link to written press release – around 1 p.m.

Video news release also will be posted to [www.michigan.gov/flintwater](http://www.michigan.gov/flintwater)



# Frequently Asked Questions About Lead in Flint Water



- Lead is hard to avoid completely. It can be found in old paint, water pipes and brass water faucets, in dirt, at some job sites, and in metal used for some hobbies.
- The amount of lead found in some Flint homes' drinking water could affect kids' health.
  - Even small amounts of lead can harm kids' health because they are little and still growing.
  - Adults are less likely to be harmed by the levels found in the water.
- Filter your drinking water using a NSF-approved filter.
  - Find a NSF-approved filter at [http://www.gchd.us/docs/lead\\_filter\\_information.pdf](http://www.gchd.us/docs/lead_filter_information.pdf).
  - If you use City of Flint water, you can call 211 to find out where you can pick up a free water filter.
- Some filters can remove up to 99% of the lead in water when used properly. To be sure your filter is removing as much lead as it can, carefully follow the instructions that came with it.
  - Change the filter cartridge as often as you should.
  - Run only cold water through the filter.
- Even after changes to the water system, it may take a while before lead levels in your home's water drop. Use the tips below to know when it's best to use filtered water:

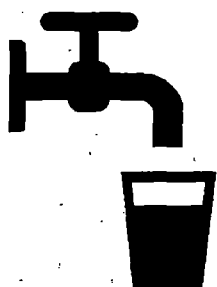
## Lead in Water

Although your water may be a different color sometimes, it is not caused by lead. It's important to remember:

- You can't see, smell, or taste lead in water.
- Lead won't change the color of your water.
- The only way to know what your home's lead levels are is by having your water tested in a lab.

Please call the Flint Water Department at 810-787-6537 to request a free or low-cost water test.

## In The Kitchen



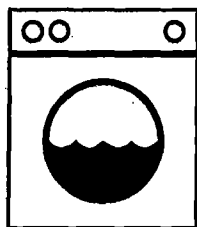
Use filtered tap water for:

- Drinking (including making coffee, drink mixes, juice, baby formula)
- Cooking (even if you boil the water, the lead will stay in the water and food)
- Washing fruits and vegetables

You can use unfiltered tap water for:

- Washing your hands
- Washing dishes
- Wiping down countertops

## Cleaning



You can use unfiltered tap water for:

- Mopping floors
- Washing clothes

Your washing machine and dryer won't put lead from the water into the air of your home.

## In the Bathroom



Use filtered tap water for:

- Brushing kids' teeth

You can use unfiltered tap water for:

- Showers
- Baths (don't let kids drink the water as they play in the tub)
- Brushing your teeth (if you are an adult)

Lead will not cause rashes or other skin problems. However, if chlorine levels or other cleaners are high in the water, it may cause itchy or dry skin (similar to what can happen when you swim in a pool).

## Caring for Pets



Use filtered tap water for:

- Pets' water bowls

You can use unfiltered tap water for:

- Baths

If you notice your pet acting differently than normal, please contact your vet.

## Other Sources of Lead in Your Home



### Lead Paint

- Homes built before 1978 likely have lead paint, both inside and outside.
- Old paint is the most common way that kids are exposed to lead.



### Dirt

- If you live in the city, there may be lead in the dirt outside your home.
- Before 1996, gas and the exhaust from cars contained lead. More lead will be found in dirt in busy traffic areas.



### Dust

- The dust in your home can contain tiny amounts of both the paint and the dirt that contain lead.



### Hobbies & Jobs

- Solder, fishing sinkers, bullets, and stained glass framing materials are some of the items in your home that may contain lead. You could also track home lead dust from your job site.

## Have Questions?

For more information about protecting yourself and your family from lead, please visit:

[www.michigan.gov/lead](http://www.michigan.gov/lead)

Or you can call the Michigan Department of Health and Human Services at:

**1-800-648-6942**

The staff at this number will help direct you to the best department that can answer your questions about lead in your home.

To request a free or low-cost water test, please call the Flint Water Department at:

**1-810-787-6537**

To find out if you can get a free water filter, please call 211.

#### Talking Points: Lead Testing Data (FREEMAN ELEMENTARY)

- A comprehensive evaluation of the plumbing system at Freeman Elementary by the DEQ and DLARA
- Samples were taken at a total of 31 faucets and drinking fountains and tested for lead.
- A series of 4 samples were taken at each location to determine if lead was coming from the fixtures or if it was deeper in the plumbing.
- At 22 of these 31 locations the levels of lead were found to be at or below 15 parts per billion.
- At the 9 locations where lead was found to be greater than 15 parts per billion, the lead levels dropped significantly with flushing demonstrating that the lead was coming from the fixture or from the plumbing close to the fixture.
- The findings of the Freeman plumbing evaluation provide several ways to address these fixtures:
  - Replacement of the fixture
  - Removing the fixtures of concern from service
  - Instituting a documented flushing protocol

#### FREE LEAD TESTING RESULTS

- The DEQ has received and analyzed 381 samples since free lead testing was offered to concerned individuals in the city of Flint.
- Over 77% of these samples came back with results that were at or below 5 parts per billion of lead
- Over 91% of these samples had lead levels at or below 15 parts per billion
- The data shows that the issues in Flint are not system wide but are site specific
- There are areas of concern and people should not guess or make assumptions, they should get their water tested
- If lead is found to be an issue, there are resources available to help individuals figure out a course of action.
- These include, replacing fixtures, flushing, replacing service lines using and filters or bottled water for drinking, cooking or other consumptive purposes.
- Households with young children, infants, pregnant women or other individuals that are more vulnerable to lead exposure are especially urged to get their water tested

#### Observations Regarding data

- Through October 19, 2015 there were 241 homeowner samples analyzed
- The 2<sup>nd</sup> 6 month period contained 69 samples
- The second 6 month sampling had a 90<sup>th</sup> percentile value of 11 ppb
- The aggregate homeowners 90<sup>th</sup> percentile value was 10 ppb
- The 90<sup>th</sup> percentile value for zip code 48503 was 10 ppb
- 182 out of 241 samples or 75.5% of the homes had lead levels in their water of 5 ppb or less.
- 5 ppb is the limit that bottled water is allowed to have **(NEED TO VERIFY)**
- There were 17 samples that exceeded the 15 ppb action level. These ranged from 16 ppb to 327 ppb
-

Senior Management Team Meeting  
Monday, December 14, 2015  
8:30 a.m. – 10:00 a.m.  
Great Lakes Conference Room  
AGENDA

Call-In No. for District Coordinators: 1-877-873-8018; Access Code: 3467059#

Flint Consultant  
To Meet with  
EPA on Tuesday

Director's Report

In-Depth Discussions:

Year End Review and 2015 Accomplishments (Director/Karen Tommasulo/Division/Office Chiefs)

Chief Deputy Director's Report

Discussion and Future SMT Meeting Agenda Items

Next SMT Meeting: January 11, 2016

Future Items of Discussion:

Budget  
Long Term Funding  
Organizational Excellence  
Engagement  
Communication Issues

GET THESE TOGETHER  
FOR JAN WED MEETING

- 10 PT

- 18 PT

- LATEST GOVS UPDATE

- 11/13 Flint Schools  
Facilities Have  
Now Been Sampled  
- Last Two Facilities  
Are Scheduled

- 9-10 Schools Private  
Schools Are  
In The Queue



# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
Pre-1967	Flint Water Treatment Plant in operation using Flint River for drinking water	1
Post-1967	Flint switched to Detroit Water and Sewerage Department for drinking water	None
January 2006	Discussions regarding Karegnondi Water Authority, <i>Preliminary Long-Term Water Supply for Genesee County</i>	2
June 25, 2009 September 2009	<i>Lake Huron Water Supply Study Karegnondi Water Authority Executive Summary and Preliminary Engineering Report</i>	3
March 2013	<i>Analysis of the Flint River as a Permanent Water Supply for the City of Flint</i> ; Prepared for: City of Flint dated July 2011	4
April 2013	Flint notifies Detroit Water and Sewerage Department of contract discontinuation and joins the Karegnondi Water Authority	5
April 2013	Detroit Water and Sewerage Department sets termination of Flint water service contract to April 17, 2014	6
June 2013	Flint notifies the Department of Environmental Quality of intent to operate Flint Water Treatment Plant full time using Flint River for drinking water	7
April 2014	The Michigan Department of Environmental Quality issues Flint Water Treatment Plant construction permits for full time operation enhancements	9
May 2014	Flint stops purchasing Detroit Water and Sewerage Department water. Starts using the City of Flint Water Treatment Plant and Flint River for drinking water	10
August 2014	Flint <i>E. coli</i> bacteria violation, localized system Boil Water Advisory	11
September 2014	Disinfection Byproducts compliance communication; the Michigan Department of Environmental Quality requests preemptive Operational Evaluation	12
September 2014	Flint total coliform bacteria violation, localized system Boil Water Advisory	13

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
October 2014	General Motors announces decision to stop using Flint River as source for production water	14
December 16, 2014	Disinfection Byproducts quarterly violation begins	15
December 31, 2014	1st 6-month round of lead and copper monitoring ends. Results due from Flint to Michigan Department of Environmental Quality on January 10, 2015	None
January 21, 2015	City of Flint Public Meeting regarding disinfection byproducts and bacteria	17
February 26, 2015	E-mail from United States Environmental Protection Agency to Michigan Department of Environmental Quality regarding elevated lead sample	18
February 27, 2015	E-mail from United States Environmental Protection Agency to Michigan Department of Environmental Quality inquiring about Optimized Corrosion Control Treatment	19
February 27, 2015	Michigan Department of Environmental Quality response to United States Environmental Protection Agency email with statement regarding optimized corrosion control program	20
March 5, 2015	2nd Disinfection Byproducts quarterly violation notice	21
March 30, 2015	Michigan Department of Environmental Quality notifies Flint of Lead/Copper Monitoring Results.	16
April 3, 2015	Long Term 2 Enhanced Surface Water Treatment Rule Letter	22
April 6, 2015	Flint proposes installation of Granular Activated Carbon Filter media to reduce disinfection byproducts	23
April 23, 2015	United States Environmental Protection Agency e-mail to Michigan Department of Environmental Quality regarding corrosion control treatment	24
April 24, 2015 May 1, 2015	Michigan Department of Environmental Quality responds to United States Environmental Protection Agency regarding corrosion control treatment	25

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

Date	Event	Attachment
April 27, 2015	United States Environmental Protection Agency provided bottles to 212 Browning for lead/copper analyses	26
May 6, 2015	Lead service line replaced at 212 Browning. United States Environmental Protection Agency on-site	27
May 28, 2015	Internal United States Environmental Protection Agency e-mail regarding results at 212 Browning	29
June 9, 2015	3rd Disinfection Byproducts quarterly violation notice	30
June 10, 2015	Semi-Annual Conference call with United States Environmental Protection Agency	31
June 30, 2015	E-mail from United States Environmental Protection Agency scheduling conference call on July 21, 2015 regarding elevated lead result and concerns regarding corrosion control	32
June 30, 2015	2nd 6-month round of lead and copper monitoring ends. Results due from Flint to Michigan Department of Environmental Quality on July 10, 2015	None
July 9, 2015	Michigan Department of Environmental Quality informed that United States Environmental Protection Agency draft internal memo is on ACLU website	33
July 14, 2015	Michigan Department of Environmental Quality issues construction permit to Flint for Granular Activated Carbon filter media W151055	34
July 21, 2015	Conference call with United States Environmental Protection Agency (Lead and Copper Rule implementation and Flint) during which it informs Michigan Department of Environmental Quality its interpretation of Lead and Copper Rule	35
July 24, 2015	Michigan Department of Environmental Quality e-mail and draft letter 90th percentile lead determination = 11 parts per billion and City of Flint requirement to add corrosion control treatment	36

## **MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE**

<b>Date</b>	<b>Event</b>	<b>Attachment</b>
<b>July 28, 2015</b>	<b>Michigan Department of Environmental Quality received blood lead level information from Michigan Department of Health and Human Services indicating that results since the switch to the Flint River are consistent with past years seasonal variations</b>	<b>37</b>
<b>August 4, 2015</b>	<b>Meeting with city representatives at Governor's office</b>	<b>38</b>
<b>August 17, 2015</b>	<b>Michigan Department of Environmental Quality notifies Flint of lead/copper monitoring results and requires City to install corrosion control treatment</b>	<b>39</b>
<b>August 23, 2015</b>	<b>Michigan Department of Environmental Quality notified by an external party that a water quality study was about to begin in Flint</b>	<b>40</b>
<b>September 2, 2015</b>	<b>Disinfection Byproducts return to compliance</b>	<b>43</b>
<b>September 11, 2015</b>	<b>United States Environmental Protection Agency e-mail confirming that Michigan Department of Environmental Quality was never sent the draft June 24, 2015 memo</b>	<b>44</b>
<b>September 21, 2015</b>	<b>Meeting with Congressional representatives, legislators, United States Environmental Protection Agency and Michigan Department of Environmental Quality to discuss issues with water quality in Flint</b>	<b>45</b>
<b>September 22, 2015</b>	<b>Meeting/Conference call with Michigan Department of Health and Human Services, Genesee County Health Department, and Michigan Department of Environmental Quality to discuss lead education/outreach</b>	<b>46</b>
<b>September 24, 2015</b>	<b>Hurley Children's Hospital data reveals elevated blood lead levels in Flint children</b>	<b>47</b>
<b>September 24, 2015</b>	<b>Michigan Department of Health and Human Services response affirms State blood lead level data is more comprehensive than Hurley Hospital data</b>	<b>None</b>

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY FLINT DRINKING WATER EVENTS TIMELINE

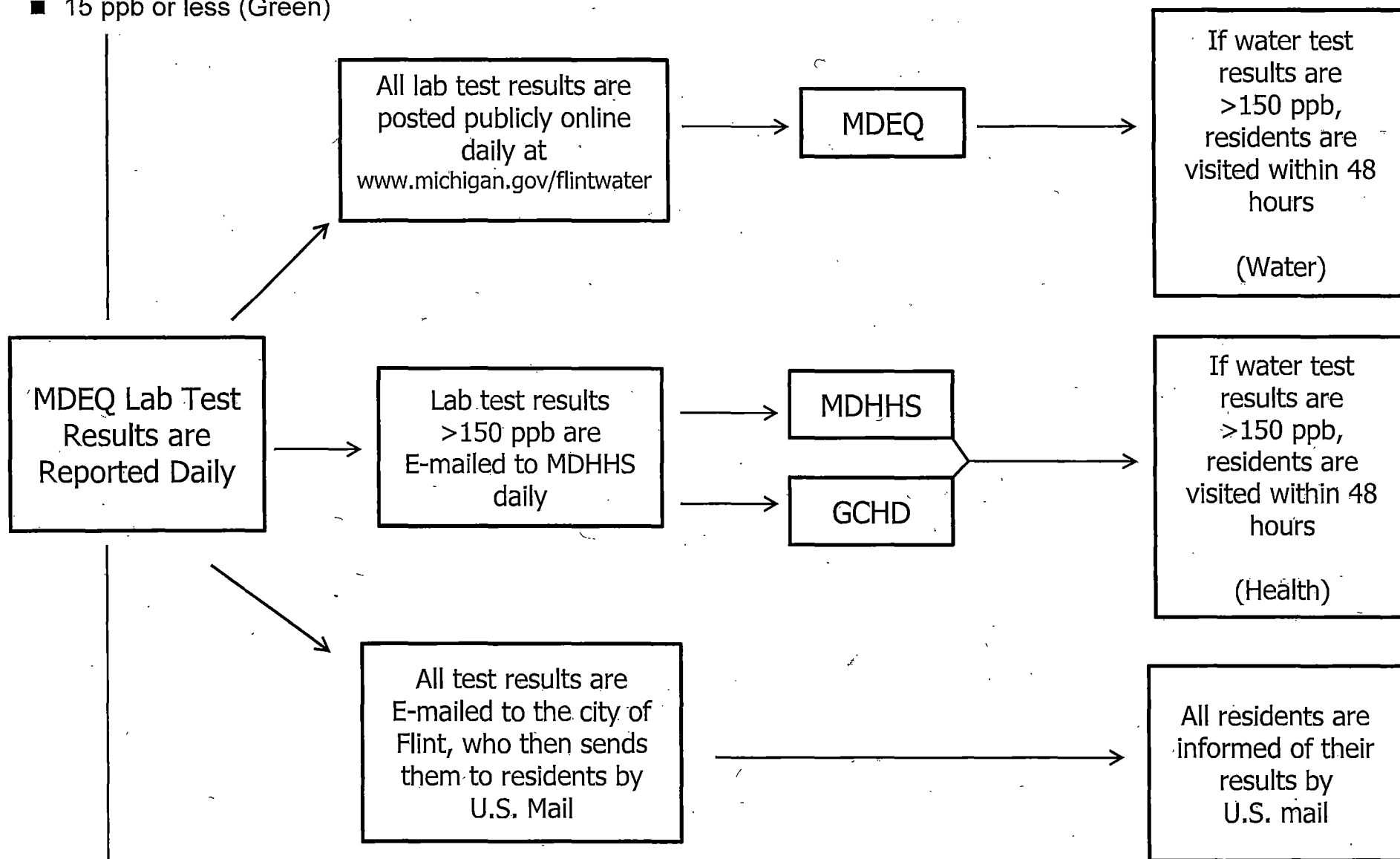
Date	Event	Attachment
September 25, 2015	Flint issues Lead Advisory regarding drinking water	48
October 1, 2015	State Chief Medical Officer confirms Hurley blood lead level data	None
October 1, 2015	Genesee County Health Department issues "Do Not Drink" Advisory	49
October 2, 2015	Michigan Department of Environmental Quality and Michigan Department of Health and Human Services press conference. Governor's Flint Action Plan announced.	50
October 2, 2015	Genesee County Health Department school screening water samples collected for lead analysis	51
October 8, 2015	Governor Press Conference: Flint to reconnect to Great Lakes Water Authority/Detroit Water and Sewerage Department	52
October 15, 2015	State Legislature authorizes a \$9 million to assist the City of Flint to pay for the return to the Detroit water system and to fund staff at schools to gauge lead exposure	None
October 16, 2015	First weekly coordination meeting held between the City of Flint and state agencies	None
October 16, 2015	Michigan Department of Environmental Quality meets with Flint Schools Superintendent and Genesee County Health Department	None
October 16, 2015	Flint switches back to Detroit Water and Sewerage Department for water	53
October 21, 2015	Governor Snyder announces formation of Flint Water Task Force to complete an After Action Review	None
October 28, 2015	Michigan Department of Environmental Quality issues construction permit for additional corrosion control treatment	54
October 30, 2015	Michigan Department of Environmental Quality letter to Flint regarding corrosion control treatment operation	55

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
FLINT DRINKING WATER EVENTS TIMELINE**

<b>Date</b>	<b>Event</b>	<b>Attachment</b>
<b>November 3, 2015</b>	<b>United States Environmental Protection Agency Memorandum regarding "Lead and Copper Rule Requirements for Optimal Corrosion Control Treatment for Large Drinking Water Systems"</b>	<b>56</b>
<b>November 4, 2015</b>	<b>United States Environmental Protection Agency Memorandum regarding "Transmittal of Final Report – High Lead at Three Residences in Flint, Michigan"</b>	<b>57</b>
<b>Mid-Late 2016</b>	<b>Planned connection to Karegnondi Water Authority (Lake Huron water to Flint Water Treatment Plant)</b>	<b>None</b>

## Flint Residential Outreach for Water and Health Planned Processes

### ■ 15 ppb or less (Green)



### ■ Greater than 150 ppb (Red)

## Flint Residential Outreach for Water and Health – DRAFT

### Planned Processes to be Implemented on February 4th

1. Residential water samples are collected at various drop points around the City of Flint
2. Samples funnel to the Flint water plant where they are transported to the MDEQ Lab (Lansing)
3. Samples are tested within 3 days (daily goal is 400, averaging 1000); all samples are preserved and inventoried
4. Sample test results are compiled daily into summaries and individualized residential test results
5. Daily lab test results are:
  - a. Posted publicly online at [www.michigan.gov/flintwater](http://www.michigan.gov/flintwater)
  - b. Test results greater than 150 ppb are emailed to MDHHS
  - c. All test results are emailed to the City of Flint, who then sends them to residents by U.S. Mail
6. Within 48 hours, MDHHS coordinates a home health visit to any resident who's test result was greater than 150 ppb. Home visit includes:
  - a. Health and wellness information
  - b. On-site blood test offered
  - c. Off-site blood test referral
  - d. Provides additional bottled water, filters and sample kits
7. Within 48 hours, MDEQ schedules a home water visit to any resident who's test result was greater than 150 ppb. Home visit includes:
  - a. Water testing and sampling information
  - b. Water sample collection
  - c. Inspection by the Flint 370 Plumbers Union (field verification of service line, aerator cleanout, filter check)
  - d. Provides additional bottled water, filters and sample kits

### Current Processes

1. Residential water samples are collected at various drop points around the City of Flint
2. Samples funnel to the Flint water plant where they are transported to the MDEQ Lab (Lansing)
3. Samples are tested within 3 days (daily goal is 400, averaging 1000); all tests are preserved and inventoried
4. Sample results are compiled daily into summaries and residential reports
5. Daily test results are:
  - a. Posted publicly online at [www.michigan.gov/flintwater](http://www.michigan.gov/flintwater)
  - b. Results greater than 150 ppb are emailed to MDHHS
  - c. All results are emailed to the City of Flint, who US postal mails them to each resident
6. MDHHS informs GCHD of any resident who's test result was greater than 150 ppb; GCHD schedules home visits for follow up services
7. MDEQ identifies any resident who's test result was greater than 150 ppb as a sentinel testing site
  - a. Targeting 400 sentinel sites total, geographically dispersed across all 9 wards
  - b. Resampled every 2 weeks for an additional 4, 2 week cycles





27TH DISTRICT  
P.O. BOX 30036  
LANSING, MI 48909-7536  
PHONE: (517) 373-0142  
FAX: (517) 373-3938  
senjananich@senate.michigan.gov

**JIM ANANICH**  
**SENATE MINORITY LEADER**  
**MICHIGAN SENATE**

January 31, 2016

THANK YOU, AGREE  
- PT. BY PT.

State of Michigan  
**Executive Office of the Governor**  
P.O. Box 30013  
Lansing, MI 48909

Governor Snyder,

On Friday, January 29, 2016, local, state and federal officials announced that ~~26 Flint homes have~~ lead levels in excess of 150 parts per billion (ppb). These results are deeply troubling and incredibly perplexing given the fact that you have known, for no less than four months, that water sampling and testing in Flint was done incorrectly, with proper protocol not being followed.

~~The water sampling protocol, which DEQ oversaw and approved of, exacerbated the State's poor response. DEQ recently boasted that Flint's lead levels were declining, but there is absolutely no way anyone could be scientifically certain of this because the State failed to employ standard testing protocol (as opposed to a "common sense" standard, to which you have referred).~~

On behalf of my community I am requesting necessary immediate actions be implemented and asking the following questions with the hope that the State stops making the same mistakes that led to this crisis in the first place.

**Necessary immediate actions:**

1. As I discussed with your administration, it was unreasonable to expect a federal waiver for Women, Infants, and Children (WIC). Therefore, I am asking that you support an immediate supplemental of \$10 million for expansion of WIC to ensure that the near-term nutritional needs of Flint residents affected by lead exposure — as a result of this water crisis — are met. Further, I expect your budget to include a plan that fully addresses their nutritional needs in the coming years.
2. All homes with pregnant women, nursing mothers and/or children under age six should receive fresh, bottled water delivered to their residence along with ready-made formula, if needed, at regular intervals until it is clear the tap water is safe to drink. Additionally, the State should hire Flint residents to assist with the delivery of the formula and water.

-CURRENT  
SUPPLEMENTAL  
BREAKDOWN

MSP  
DISTRIBUTION  
INFO

COUNTER  
w/ STATS \$  
8

#'S  
OVER  
TIME

1?



27TH DISTRICT  
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**JIM ANANICH**  
**SENATE MINORITY LEADER**  
**MICHIGAN SENATE**

3. It is unconscionable that Flint residents are being forced to pay for water that is unfit for consumption. Your budget must provide significant relief for the millions of dollars that Flint residents have been paying for poisonous water. Also, the State must have a plan to reimburse all Flint residents for their water bills retroactive to the time when the switch to the Flint River as the city's water source was made — by February 6, 2016.
4. Any meeting during which the DEQ plans to discuss Flint water and/or testing — including meetings of the Flint Water Interagency Coordinating Committee — should be announced in advance to comply with the Open Meetings Act, and also should be livestreamed for public consumption.
5. On October 8, 2015, you made an announcement in Flint that the state would be “offering free water testing to Flint residents to assure their drinking water is safe.” I would like a copy of directions given to your internal staff about what actions are being taken to assure the water is safe.
6. The legislature should hold frequent oversight hearings now so that legislators can ask these types of questions on a regular basis instead of via a written letter. Your administration should comply with all requests for documentary evidence or sworn testimony.

**Questions:**

1. At what point will the the State assemble a Tier-1 sampling pool as required by the Lead and Copper Rule?
2. What is the State's plan to establish a Tier-1 sampling pool, given that Flint's lead line records — which have not been verified — are on 45,000 index cards?
3. What steps has the State already taken toward establishing a Tier-1 sampling pool?
4. Who is in charge of the water sampling program at DEQ?
5. On January 24, 2016, the DEQ boasted that lead levels in the City of Flint's water were lower. In that data, were they including non-lead plumbing? If so, why?
6. Did water analyses of Flint's water in October through December 2015 reveal homes with lead levels over 150 ppb? If so, were residents of those homes notified immediately?



27TH DISTRICT  
P.O. BOX 30036  
LANSING, MI 48909-7536  
PHONE: (517) 373-0142  
FAX: (517) 373-3938  
senjananich@senate.michigan.gov

**JIM ANANICH**  
**SENATE MINORITY LEADER**  
**MICHIGAN SENATE**

7. If there is no pattern associated with the ultra-high lead results in homes, does that mean that all homes are at risk for lead level spikes?
8. What systems has the State established to ensure that data from non-lead plumbing and lead plumbing are separated? If none have been established, when will state officials stop co-mingling these two different sets of data?
9. At yesterday's press conference, it was disclosed that 26 homes tested above 150 ppb, yet publicly accessible, online data has approximately half that number listed. What is the protocol for releasing this information publicly?
10. At what point will the State determine whether the lead pipes have been irreparably damaged? If the protective layer of phosphates is never adequately reestablished, what is the State's plan for replacing pipes? What is the earliest point at which the residents of Flint might expect to see pipe replacement begin?

My community and I have lost faith in your administration and its ability to provide for the safety and welfare of the citizens of Flint. Answering these questions and fulfilling these requests as soon as possible will be one small step forward.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Ananich".

State Senator Jim Ananich

cc:  
Keith Creagh, Interim Director, Michigan Department of Environmental Quality  
Richard Baird, Transformation Manager, Office of the Governor  
Senator Arlan Meekhof (R-30), Majority Leader, Michigan Senate  
Representative Kevin Cotter (R-99), Speaker, Michigan House of Representatives  
Representative Tim Greimel (D-29), Democratic Leader, Michigan House of Representatives

# Letter Buckslip

12-Oct-15

ID:	DIR00177	Deputy Director
Date of letter:	10/1/2015	Deputy's Mgmt. Asst.
Date received:	10/2/2015	Director's Office Staff
Date due:	10/19/2015	Division/Office Chief
Reply date:		Division/Office Chief's Mgmt. Asst.
Last name:	Tallman	Prepared by:
First name:	Sarah C.	Division/Office
Organization:	Natural Resources Defense Council	Exec. Div. File No.
Subject:	Petition for Emergency Action under the Safe Drinking Water Act to Abate the Imminent and Substantial Endangerment to Flint, Michigan Residents	<input type="checkbox"/> Delegated
Reply to:		
Author:		
Owner:	OLSZEWSKIR	

<u>Action</u>	<u>Action Date</u>	<u>Due Date</u>	<u>Entity</u>	<u>Signature</u>	<u>Owner</u>	<u>CCs</u>
Assigned 1	10/12/2015	10/19/2015	EXE	HAA	OLSZEWSKIR	Thelen Sygo Shekter Smith Devereaux Manning/Hart File 2-2 EPA

Comments: Original to EXE (Jim Sygo)

Jim Sygo to discuss with AG's office and ODWMA. Disc w/exhibits went to Sygo. Mbt

DIR00177

NATURAL RESOURCES DEFENSE COUNCIL

October 1, 2015

**Via FedEx**

Dan Wyant, Director  
Michigan Department of Environmental Quality  
Executive Division  
P.O. Box 30473  
Lansing, MI 48909-7973

Re: *Petition for Emergency Action under the Safe Drinking Water Act to  
Abate the Imminent and Substantial Endangerment to Flint, Michigan  
Residents*

Director Wyant:

Enclosed please find a Petition for Emergency Action under Section 1431 of the Safe Drinking Water Act to abate the imminent and substantial endangerment to Flint, Michigan residents from lead contamination in their drinking water, served on EPA Administrator McCarthy today. I have also enclosed a CD containing the exhibits to the Petition.

Regards,



Sarah C. Tallman  
Natural Resources Defense Council  
20 N. Wacker Drive, Suite 1600  
Chicago, IL 60622  
(312) 651-7918  
stallman@nrdc.org

Enclosure

**BEFORE THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

---

Petition for Emergency Action under the Safe Drinking Water Act, 42 U.S.C. § 300i, to Abate  
the Imminent and Substantial Endangerment to Flint, Michigan Residents from Lead  
Contamination in Drinking Water

---

**Submitted on Behalf of Petitioners Coalition for Clean Water, Concerned Pastors for  
Social Action, Water You Fighting For, Democracy Defense League Water Task Force,  
Flint Water Study Team, Michigan Nurses Association, NAACP – Michigan State  
Conference, Michigan Chapter of the National Conference of Black Lawyers, American  
Civil Liberties Union of Michigan, and the Natural Resources Defense Council**

October 1, 2015

**Notice of Petition**

Gina McCarthy  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Mail Code: 1101A  
Washington, DC 20460

Susan Hedman  
Regional Administrator  
U.S. Environmental Protection Agency Region 5  
77 West Jackson Boulevard  
Mail Code: R-19J  
Chicago, IL 60604-3507

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3. Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation (July 16, 2015)
4. Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post (July 10, 2015)
5. Laura Gottesdiener, *Flint, Mich., Residents find state water control hard to swallow*, Al Jazeera America (Apr. 3, 2015)
6. Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live (Sept. 5, 2014)
7. Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press (Jan. 23, 2015)
8. Michigan Department of Environmental Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014)
9. U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water
10. Order Den. Mot. for Prelim. Inj. 1, *Coalition for Clean Water v. City of Flint*, No. 15-cv-12084 (E.D. Mich. June 23, 2015)
11. Marc Edwards, *Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015)
12. Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015)
13. Brianna Owczarzak, *GM says no to Flint water*, WNEM (Oct. 14, 2014)
14. U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013)
15. U.S. EPA, Basic Information About Lead in Drinking Water (last updated June 26, 2015)
16. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015)



17. City of Flint, City of Flint Issues Lead Advisory (Sept. 25, 2015)
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19. Complaint, *Coalition for Clean Water v. City of Flint*, No. 104900-cz (Mich. Cir. Ct. June 5, 2015)
20. Ron Fonger, *Groups collect 26,000 signatures to end use of Flint River for Water*, Michigan Live (Aug. 31, 2015)
21. Ron Fonger, *Flint mayor accepts petitions but not call to end use of Flint River*, Michigan Live (Aug. 31, 2015)
22. William E. Ketchum III, *People take to streets to protest Flint water quality*, Michigan Live (Feb. 14, 2015)
23. AP, *Flint city councilman: 'We got bad water,'* Detroit Free Press (Jan. 14, 2015)
24. Letter from Jim Ananich, Mich. Sen. Minority Leader and Sheldon Neeley, Phil Phelps, Mich. State Representatives, to Dan Wyant, MDEQ (Sept. 10, 2015)
25. Letter from U.S. Representative Dan Kildee, U.S. Representative, to Administrator Gina McCarthy, U.S. EPA, & Director Dan Wyant, MDEQ (Sept. 9, 2015)
26. *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study (Sept. 16, 2015)
27. Siddhartha Roy, *Flint Water Study Updates for the Citizens of Flint* (Sept. 15, 2015)
28. Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live (Sept. 15, 2015)
29. *Lead testing results for water sampled by residents*, Flint Water Study (last visited Sept. 28, 2015)
30. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (Mar. 18, 2015)
31. Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (June 4, 2015)
32. Consumer Notice of Lead & Copper Results in Drinking Water (Feb. 18, 2015)
33. Mich. Dep't of Env'tl. Quality, *Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply* (Aug. 20, 2015).
34. Drinking Water Lead & Copper Sampling Instructions

35. Memorandum from Miguel A. Del Toral, Regulations Mgr., Ground Water and Drinking Water Branch, U.S. EPA Region 5, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, U.S. EPA Region 5, re High Levels in Flint, Michigan—Interim Report 2 (June 24, 2015)
36. U.S. EPA, Lead and Copper Rules Monitoring and Reporting Guidance for Public Water Systems 28 (Mar. 2010)
37. Letter from Cynthia C. Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008)
38. MDEQ, Frequently Asked Questions: Water Lead Levels in the City of Flint (Sept. 2015)
39. Centers for Disease Control and Prevention, Preventing Lead Poisoning in Your Children: Chapter 2 (Oct. 1991)
40. Centers for Disease Control and Prevention, *What Do Parents Need to Know to Protect Their Children?* (last updated June 19, 2014)
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43. Lead in Drinking Water, Wisc. Dep't of Nat. Res. (2008)
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45. Ronnie Levin, et al., *Lead Exposures in U.S. Children, 2008: Implications for Prevention*, 116 Environ. Health Perspect. (1) (2008)
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48. Email from Jennifer Crooks, U.S. EPA, to Mike Prysby (Feb. 26, 2015)
49. Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community (PowerPoint Presentation)

50. Kristi Tanner & Nancy Kaffer, *State data confirms higher blood-lead levels in Flint kids*, Detroit Free Press (Sept. 29, 2015)
51. Centers for Disease Control and Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013)
52. American FactFinder, 2009-2013 American Community Survey 5-year Estimates, Flint, Michigan and State of Michigan
53. American Cancer Society, *Lead, Lead in the Environment* (last updated May 27, 2014)
54. 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 2013)
55. CPSC, *CPSC Announces Final Ban on Lead-Containing Paint* (Sept. 2, 1977)
56. Dominic Adams, *State says Flint hasn't applied for permit to use river as drinking water source*, Michigan Live (Mar. 28, 2014)
57. Email from Stephen Busch, MDEQ, to Jennifer Crooks and Miguel Del Toral, U.S. EPA (Feb. 27, 2015)
58. Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015)
59. Email from Michael Glasgow (June 1, 2015)
60. City of Flint Water Plant, *Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply* (Jul. 28, 2015)
61. Email from Adam Rosenthal, MDEQ, to Michael Glasgow, Brent Wright, City of Flint (June 25, 2015)
62. Letter from MDEQ to MI State Senators (Sept. 17, 2015)
63. *Did this Michigan Town Poison its Children?*, U.S. News & World Report (Sept. 24, 2015)
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71. U.S. EPA, Planning for an Emergency Drinking Water Supply (June 2011)
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The residents of Flint, Michigan have been and continue to be exposed to dangerous levels of lead in their drinking water. Monitoring results confirm that, in many instances, these levels are well above the threshold set by the U.S. Environmental Protection Agency (EPA) that triggers mandatory corrective action by public water systems. The City of Flint and the Michigan Department of Environmental Quality (MDEQ) have failed to address this public health crisis, despite their awareness of these monitoring results and data showing increasing blood lead levels in children residing in Flint.

The Coalition for Clean Water, Concerned Pastors for Social Action, Water You Fighting For, Democracy Defense League Water Task Force, Flint Water Study Team, Michigan Nurses Association, NAACP – Michigan State Conference, Michigan Chapter of the National Conference of Black Lawyers, American Civil Liberties Union of Michigan, and Natural Resources Defense Council (collectively, Petitioners) petition EPA to use its emergency powers under the Safe Drinking Water Act (SDWA or the Act), 42 U.S.C. § 300i, to take action to abate the imminent and substantial endangerment to human health caused by lead contamination in Flint's drinking water. As Petitioners demonstrate below, this contamination meets the SDWA requirements for immediate action by EPA and requires a comprehensive federal response.

## **I. Background**

Water-quality problems have plagued Flint's water system since at least April 2014, when the City began using the Flint River as its water source after deciding not to continue purchasing water from Lake Huron through the Detroit Water and Sewerage Department, as it had done for nearly fifty years.<sup>1</sup> In the eighteen months since the switch to Flint River water, the City's drinking water has been at times discolored, foul smelling, and "laden with sediments."<sup>2</sup> Residents report that they have experienced hair loss, skin rashes, and vomiting after drinking the water.<sup>3</sup> In the summer of 2014, the City was forced to issue several boil-water notices after tap water tested positive for total coliform bacteria, which

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<sup>1</sup> See Dominic Adams, *Closing the valve on history: Flint cuts water flow from Detroit after nearly 50 years*, Michigan Live, Apr. 25, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/04/closing\\_the\\_valve\\_on\\_history\\_f.html](http://www.mlive.com/news/flint/index.ssf/2014/04/closing_the_valve_on_history_f.html) (attached as Ex. 1); Letter from Darnell Earley, Emergency Manager, to Sue McCormick, Detroit Water & Sewer Dep't (Mar. 7, 2014) (explaining that the City "has actively pursued using the Flint River as a temporary water source" instead of accepting Detroit's offer to "provide[] Flint with the option of continuing to purchase water from DWSD") (attached as Ex. 2).

<sup>2</sup> See Curt Guyette, *In Flint, Michigan, Overpriced Water is Causing People's Skin to Erupt in Rashes and Hair to Fall Out*, The Nation, July 16, 2015, <http://www.thenation.com/article/in-flint-michigan-overpriced-water-is-causing-peoples-skin-to-erupt-and-hair-to-fall-out/> (attached as Ex. 3); Wenonah Hauter, *Flint's Brown Water Blues*, Huffington Post, July 10, 2015, [http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues\\_b\\_7765132.html](http://www.huffingtonpost.com/wenonah-hauter/flints-brown-water-blues_b_7765132.html) (attached as Ex. 4).

<sup>3</sup> Laura Gottesdiener, *Flint, Mich., Residents find state water control hard to swallow*, Al Jazeera America, Apr. 3, 2015, <http://america.aljazeera.com/articles/2015/4/3/flint-residents-find-state-water-control-hard-to-swallow.html> (attached as Ex. 5).

suggested a possible "pathway for pathogens and fecal contamination" to enter the water system.<sup>4</sup>

The City's subsequent treatment of the water to kill disease-carrying pathogens resulted in elevated levels of total trihalomethanes (TTHM), a byproduct of disinfection.<sup>5</sup> Drinking water with TTHM levels that exceed the federal limit can cause "liver, kidney, or central nervous system problems and increased risk of cancer."<sup>6</sup> In response to the City's water problems, local hospitals, schools, and museums began using bottled water instead of tap water.<sup>7</sup> Some grocery stores reduced the price of bottled water and "sponsored community giveaways of bottled water to low income residents."<sup>8</sup>

Flint River water is also highly corrosive, causing dangerous amounts of lead to leach out of pipes and into the City's water system.<sup>9</sup> Recent sampling has shown that lead is present in Flint's water system at levels well above 15 parts per billion (ppb), the "action level" for lead under the SDWA.<sup>10</sup> These high lead levels put residents at risk of increased lead exposure, which can cause a broad array of serious, irreversible health effects, including cognitive impairment, decreased red blood cell survival, kidney damage, coronary heart disease, and impaired reproductive function.<sup>11</sup>

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<sup>4</sup> Ron Fonger, *Flint issues boil water advisory for section of the city after positive test result for total coliform bacteria*, Michigan Live, Sept. 5, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/09/flint\\_issues\\_boil\\_water\\_adviso.html](http://www.mlive.com/news/flint/index.ssf/2014/09/flint_issues_boil_water_adviso.html) (attached as Ex. 6).

<sup>5</sup> Robin Erb, *Who wants to drink Flint's water?*, Detroit Free Press, Jan. 23, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/22/water-woes-latest-hit-flint/22193291/> (attached as Ex. 7); Mich. Dep't of Env'tl. Quality, Violation Notice—Maximum Contaminant Level for Total Trihalomethanes (Dec. 16, 2014) (attached as Ex. 8).

<sup>6</sup> U.S. EPA, Basic Information about Disinfection Byproducts in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm> (last updated Dec. 13, 2013) (attached as Ex. 9); see 40 C.F.R. § 141.64(b).

<sup>7</sup> Order Den. Mot. for Prelim. Inj. 1, *Coalition for Clean Water v. City of Flint*, No. 15-cv-12084 (E.D. Mich. June 23, 2015), ECF No. 6 (attached as Ex. 10).

<sup>8</sup> *Id.*

<sup>9</sup> Marc Edwards, *Flint River water 19X more corrosive than Detroit water for Lead Solder; Now What?*, Flint Water Study (Sept. 11, 2015), <http://flintwaterstudy.org/2015/09/test-update-flint-river-water-19x-more-corrosive-than-detroit-water-for-lead-solder-now-what/> (attached as Ex. 11); Marc Edwards, *Flint River water is very corrosive to lead, and causing lead contamination in homes*, Flint Water Study (Sept. 2, 2015), <http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/> (attached as Ex. 12). The river water is so corrosive that in October 2014, a local GM engine plant decided to switch back to Lake Huron water to avoid damage to equipment at the plant from corrosion. Brianna Owczarzak, *GM says no to Flint water*, WNEM, Oct. 14, 2014, <http://www.wnem.com/story/26785625/gm-says-no-to-flint-water> (attached as Ex. 13).

<sup>10</sup> 40 C.F.R. § 141.80(c)(1).

<sup>11</sup> See, e.g., U.S. EPA, Integrated Science Assessment for Lead tbl.ES-1 (June 2013) (attached as Ex. 14) (summarizing health effects of lead exposure); U.S. EPA, Basic

The City of Flint and the Michigan Department of Environmental Quality (MDEQ) have been aware of independent monitoring results showing exceedingly high lead levels in the City's drinking water for months.<sup>12</sup> Despite increasing public concern about the safety of the City's drinking water, neither the City nor MDEQ has taken the actions necessary to meaningfully address the problem. The City has not implemented *any* measures to treat the highly corrosive Flint River water to reduce the amount of lead leaching from service pipes.<sup>13</sup> And MDEQ refuses to use its enforcement authority under the SDWA or state law to require Flint to employ corrosion control measures or provide alternative safe water supplies.<sup>14</sup>

When state and local authorities fail to adequately address a public health crisis, the SDWA empowers EPA to act. Section 1431 of the Act vests EPA with broad emergency authority to address endangerments to public health from contaminated drinking water. The EPA Administrator may use these emergency powers "upon receipt of information that a contaminant which is present in or is likely to enter a public water system . . . may present an imminent and substantial endangerment to the health of persons, and that appropriate State and local authorities have not acted to protect the health of such persons."<sup>15</sup> Once the Administrator receives this information, she may "take such actions as [s]he may deem necessary in order to protect [public] health."<sup>16</sup> These actions "may include (but shall not be limited to) . . . issuing such orders as may be necessary to protect the health of persons who are or may be users of such system (including travelers), including

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Information About Lead in Drinking Water, <http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm> (last updated June 26, 2015) (explaining that "[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development," and that "[a]dults who drink this water over many years could develop kidney problems or high blood pressure") (attached as Ex. 15); *see also* National Ambient Air Quality Standards for Lead, 80 Fed. Reg. 278, 290 (Jan. 5, 2015).

<sup>12</sup> *See, e.g.*, Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, and Mike Prysby, MDEQ (Feb. 26, 2015) (describing "[b]ig worries" for high lead test results at a Flint resident's home) (attached as Ex. 16).

<sup>13</sup> The City's plan to implement corrosion control measures within thirty to sixty days is inadequate to address the ongoing endangerment. *See* City of Flint, City of Flint Issues Lead Advisory (Sept. 25, 2015), <https://www.cityofflint.com/2015/09/25/city-of-flint-issues-lead-advisory/> (attached as Ex. 17).

<sup>14</sup> *See* Mich. Comp. Laws Ann. §§ 325.1015(1) ("When considered necessary for protection of the public health, the department shall notify a supplier of water of the need to make changes in operations, to provide treatment, [or] to make structural changes in existing systems . . . as necessary to produce and distribute an adequate quantity of water meeting the state drinking water standards."), (3) ("If a public water supply poses an imminent hazard to the public health, the department may issue an emergency order immediately, . . . requiring such action as the department determines is necessary to protect the public health.").

<sup>15</sup> 42 U.S.C. § 300i(a).

<sup>16</sup> *Id.*

orders requiring the provision of alternative water supplies by persons who caused or contributed to the endangerment.”<sup>17</sup> EPA has, in the past, used its emergency powers to issue orders to provide alternative safe water sources to community members, require public notice of the drinking water hazard, require contributors to the hazard to treat or otherwise mitigate the hazardous conditions, and require additional monitoring and data-collection activities.<sup>18</sup>

As Petitioners demonstrate below, the lead contamination in Flint’s drinking water meets the prerequisites that authorize EPA to take emergency action under the SDWA.

## II. Interests of Petitioners

Petitioners are community groups and advocacy organizations seeking safe and clean water for all residents in Flint. For instance, the Coalition for Clean Water (Coalition), which includes Concerned Pastors for Social Action, Water You Fighting For, and Democracy Defense League Water Task Force, among other community members, has urged city and state officials for months to address Flint’s water-quality problems. The Coalition filed a lawsuit in June 2015 in the Circuit Court for the County of Genesee seeking declaratory, injunctive, and other relief relating to Flint’s water-quality problems.<sup>19</sup> In August 2015, Food and Water Watch, Water You Fighting For, and the Coalition for Clean Water collected more than 26,000 signatures on a petition to Mayor Dayne Walling asking the City to end its use of the Flint River as a drinking water source.<sup>20</sup> Community members have also organized marches<sup>21</sup> and met with City Council<sup>22</sup> to raise concerns about the quality of Flint’s drinking water. These advocacy activities fueled awareness and concern

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<sup>17</sup> *Id.*

<sup>18</sup> See H.R. Rep. No. 93-1185, 1974 U.S.C.C.A.N. 6454, 6487 (1974); *In re Yakima Valley Dairies*, Admin. Order on Consent (U.S. EPA Region 10, Mar. 5, 2013), [http://www.epa.gov/region10/pdf/sites/yakimagw/consent\\_order\\_yakima\\_valley\\_dairies\\_march2013.pdf](http://www.epa.gov/region10/pdf/sites/yakimagw/consent_order_yakima_valley_dairies_march2013.pdf) (attached as Ex. 18).

<sup>19</sup> Compl., *Coalition for Clean Water v. City of Flint*, No. 104900-cz (Mich. Cir. Ct. June 5, 2015) (attached as Ex. 19).

<sup>20</sup> Ron Fonger, *Groups collect 26,000 signatures to end use of Flint River for Water*, Michigan Live, Aug. 31, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/groups\\_delivering\\_26000\\_signat.html#incart\\_river](http://www.mlive.com/news/flint/index.ssf/2015/08/groups_delivering_26000_signat.html#incart_river) (attached as Ex. 20); Ron Fonger, *Flint mayor accepts petitions but not call to end use of Flint River*, Michigan Live, Aug. 31, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/flint\\_mayor\\_accepts\\_petitions.html](http://www.mlive.com/news/flint/index.ssf/2015/08/flint_mayor_accepts_petitions.html) (attached as Ex. 21).

<sup>21</sup> William E. Ketchum III, *People take to streets to protest Flint water quality*, Michigan Live, Feb. 14, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/02/flint\\_residents\\_protest\\_citys.html](http://www.mlive.com/news/flint/index.ssf/2015/02/flint_residents_protest_citys.html) (attached as Ex. 22).

<sup>22</sup> AP, *Flint city councilman: ‘We got bad water,’* Detroit Free Press, Jan. 14, 2015, <http://www.freep.com/story/news/local/michigan/2015/01/14/flint-water-resident-complaints/21743465/> (attached as Ex. 23).



among residents and some elected officials in Flint,<sup>23</sup> but have not resulted in any comprehensive action by the City or the State.

**III. Lead present in and likely to continue to enter Flint's water system presents an imminent and substantial endangerment to human health**

**A. Lead is present in and likely to continue to enter Flint's water system**

Flint's residents face ongoing endangerment from lead in their drinking water. Recent sampling data show that dangerously high levels of lead are present in and will likely continue to enter Flint's water system.<sup>24</sup> In August and September 2015, Dr. Marc Edwards, a water resources engineering professor at Virginia Tech, tested 252 drinking water samples collected from Flint residences. Edwards found that *ten percent* of these samples had lead levels of 25 ppb or more, substantially in excess of the federal action level of 15 ppb.<sup>25</sup> Several samples exceeded 100 ppb, and one sample exceeded 1000 ppb.<sup>26</sup> Edwards' sampling data show that lead—a contaminant under the SDWA<sup>27</sup>—is present in Flint's water system.

The results of Edwards' testing are even more concerning because the sampling did not target high-risk residences, as the City is required to do under the Lead and Copper Rule.<sup>28</sup> Because lead levels in a water system are not evenly distributed, EPA requires monitoring for lead under the SDWA to target high-risk residences, "to better ensure that high levels of lead are detected and that the system institutes treatment that provides

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<sup>23</sup> See Letter from Jim Ananich, Mich. Sen. Minority Leader and Sheldon Neeley, Phil Phelps, Mich. State Representatives, to Dan Wyant, MDEQ (Sept. 10, 2015) (attached as Ex. 24); Letter from U.S. Representative Dan Kildee, U.S. Representative, to Adm'r Gina McCarthy, U.S. EPA, and Director Dan Wyant, MDEQ (Sept. 9, 2015) (attached as Ex. 25).

<sup>24</sup> Flint's water system is a "public water system" for purposes of the SDWA because it provides water for human consumption to more than twenty-five individuals. 42 U.S.C. § 300f(4).

<sup>25</sup> *Flint Town Hall Meeting Presentation and Distribution of lead results across Flint by ward and zip codes*, Flint Water Study (Sept. 16, 2015), <http://flintwaterstudy.org/2015/09/distribution-of-lead-results-across-flint-by-ward-and-zip-codes/> (attached as Ex. 26); Siddhartha Roy, *Flint Water Study Updates for the Citizens of Flint* (Sept. 15, 2015) (attached as Ex. 27); Ron Fonger, *Virginia Tech professor says Flint's tests for lead in water can't be trusted*, Michigan Live, Sept. 15, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/09/virginia\\_tech\\_researcher\\_says.html](http://www.mlive.com/news/flint/index.ssf/2015/09/virginia_tech_researcher_says.html) (attached as Ex. 28).

<sup>26</sup> *Lead testing results for water sampled by residents*, Flint Water Study, <http://flintwaterstudy.org/information-for-flint-residents/results-for-citizen-testing-for-lead-300-kits/> (attached as Ex. 29).

<sup>27</sup> See 42 U.S.C. § 300f(6).

<sup>28</sup> 40 C.F.R. § 141.86(a)(3)-(5); 56 Fed. Reg. 26,460, 26,514 (June 7, 1991) (adopting approach that "require[s] water systems to collect samples from high-risk residences that are most likely to have lead problems").

uniform and adequate levels of public health protection.”<sup>29</sup> Because targeting high-risk residences “means that the detected levels will likely be higher than if sampling were randomly distributed,”<sup>30</sup> Edwards’ data showing a 90th percentile lead level of 25 ppb is particularly alarming given that his sampling protocol would be expected to produce *lower* results than the targeted sampling protocol mandated by the Lead and Copper Rule.

The City’s monitoring data confirm that some Flint residents’ water contains lead at concentrations above the federal action level. Several samples collected by the City showed lead levels as high as 397 ppb, 25 times the action level.<sup>31</sup> Although the City claims that its data show that the 90th percentile lead concentration is lower than the 90th percentile in Edwards’ sampling pool, these differences may be attributable to the sampling methods employed by the City. For instance, the City instructed residents to pre-flush their water for “at least 5 minutes” before collecting the sample.<sup>32</sup> Pre-flushing has the effect of reducing the amount of lead in the sample, which is why one of the key steps residents can take to reduce their lead exposure following discovery of a lead problem is to flush their taps prior to consuming tap water.<sup>33</sup> Pre-flushing in sampling results in “significant underestimation of lead levels in drinking water.”<sup>34</sup> Pre-flushing is not included in the collection procedures EPA recommends,<sup>35</sup> and is contrary to the Lead and Copper Rule’s intent to use worst-case lead and copper sampling data.<sup>36</sup> Evidence also shows that in the January to June 2015 monitoring period, the City did not use a pre-developed sampling pool that targeted high-

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<sup>29</sup> 56 Fed. Reg. at 26,514.

<sup>30</sup> *Id.*

<sup>31</sup> See Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ (Mar. 18, 2015) (referring to sample with lead level at 397 ppb) (attached as Ex. 30); Email from Jennifer Crooks, U.S. EPA, to Stephen Busch, MDEQ, et al. (June 4, 2015) (referring to samples showing lead levels 22 ppb and 40 ppb) (attached as Ex. 31); Consumer Notice of Lead & Copper Results in Drinking Water (Feb. 18, 2015) (lead level at 104 ppb) (attached as Ex. 32); see also Mich. Dep’t of Env’tl. Quality, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Aug. 20, 2015) (showing six samples with lead levels over the action level (attached as Ex. 33).

<sup>32</sup> Drinking Water Lead & Copper Sampling Instructions, *available at* [http://www.michigan.gov/documents/deq/Lead\\_Copper\\_Sampling\\_Instructions\\_329915\\_7.pdf](http://www.michigan.gov/documents/deq/Lead_Copper_Sampling_Instructions_329915_7.pdf) (attached as Ex. 34).

<sup>33</sup> Memorandum from Miguel A. Del Toral, Regulations Mgr., Ground Water and Drinking Water Branch, U.S. EPA Region 5, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, U.S. EPA Region 5, re High Levels in Flint, Michigan—Interim Report 2 (June 24, 2015) (attached as Ex. 35).

<sup>34</sup> *Id.*

<sup>35</sup> U.S. EPA, Lead and Copper Rules Monitoring and Reporting Guidance for Public Water Systems 28 (Mar. 2010) (attached as Ex. 36).

<sup>36</sup> See Letter from Cynthia C. Dougherty, U.S. EPA, to Ralph Scott, Alliance for Healthy Homes (Sept. 12, 2008) (“[W]e believe that [pre-flushing] goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowners in the sample.”) (attached as Ex. 37).

risk residences and did not sample sites consistently across monitoring periods.<sup>37</sup> This likewise may have caused the City's sampling results to underrepresent the 90th percentile lead level in the water system.<sup>38</sup>

The lead contamination in Flint's water is likely to continue. As EPA has explained, "[t]he amount of lead in drinking water depends heavily on the corrosivity of the water,"<sup>39</sup> and testing has shown that Flint River water is highly corrosive. Moreover, the City has no treatment program in place to control the corrosive effects of the water on the City's thousands of lead service lines.<sup>40</sup>

**B. Lead in drinking water presents an imminent and substantial endangerment to Flint residents**

The endangerment to Flint residents from lead in drinking water is both "imminent" and "substantial."<sup>41</sup> The endangerment to community members' health is imminent because the threat "is present now."<sup>42</sup> Highly corrosive water in the Flint River has been flowing through lead service lines in Flint's water system for more than a year without any corrosion control treatment, and sampling has already shown the existence of dangerously high levels of lead in residents' tap water.

The seriousness of the potential harms from lead exposure renders the endangerment "substantial" for purposes of the SDWA.<sup>43</sup> The poisonous effects of lead on "virtually every system in the body," and particularly on the developing brains of young children, are well documented.<sup>44</sup> "Even low levels of lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement," effects that are irreversible.<sup>45</sup>

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<sup>37</sup> See *infra* p. 11 & nn. 70-74; 40 C.F.R. § 141.86(a), (b)(4).

<sup>38</sup> See *infra* p. 11-12.

<sup>39</sup> 56 Fed. Reg. 26,460, 26,466 (June 7, 1991).

<sup>40</sup> MDEQ, Frequently Asked Questions: Water Lead Levels in the City of Flint (Sept. 2015), [https://www.michigan.gov/documents/deq/deq-spotlight-Flint\\_water\\_FAQs\\_500946\\_7.pdf](https://www.michigan.gov/documents/deq/deq-spotlight-Flint_water_FAQs_500946_7.pdf) (stating that Flint has more than 15,000 lead service lines) (attached as Ex. 38).

<sup>41</sup> *Id.* § 300i.

<sup>42</sup> *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 486 (1996) (interpreting substantial-and-imminent-endangerment provision in RCRA).

<sup>43</sup> *E.g., Me. People's Alliance v. Mallinckrodt, Inc.*, 471 F.3d 277, 288 (1st Cir. 2006).

<sup>44</sup> Centers for Disease Control and Prevention, Preventing Lead Poisoning in Your Children: Chapter 2 (Oct. 1991), <http://www.cdc.gov/nceh/lead/publications/books/plpyc/chapter2.htm> (attached as Ex. 39); see also 80 Fed. Reg. 278, 290 (Jan. 5, 2015) ("Lead has been demonstrated to exert a broad array of deleterious effects on multiple organ systems."); 56 Fed. Reg. 26,460, 26,467-68 (June 7, 1991).

<sup>45</sup> Centers for Disease Control and Prevention, *What Do Parents Need to Know to Protect Their Children?* (last updated June 19, 2014), [http://www.cdc.gov/nceh/lead/ACCLPP/blood\\_lead\\_levels.htm](http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm) (attached as Ex. 40).

The scientific community has not identified *any* threshold of lead in blood below which there are no adverse health impacts.<sup>46</sup>

Increased lead exposure from drinking water is dangerous because “drinking water can make up 20 percent or more of a person’s total exposure to lead.”<sup>47</sup> For infants whose diet consists of baby formula made with drinking water, lead in drinking water can make up between forty and sixty percent of total lead exposure.<sup>48</sup> Lead levels in drinking water above the federal action level have been associated with an increase in the rate of individuals with elevated blood lead levels.<sup>49</sup> Exposure to lead-contaminated drinking water has also been associated with fetal death and reduced birth rates.<sup>50</sup> As EPA has recognized, “[i]nfants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development.”<sup>51</sup> In short, there is no safe level of lead in drinking water.<sup>52</sup>

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<sup>46</sup> Centers for Disease Control and Prevention, National Biomonitoring Program, Factsheet: Lead (last updated Jul. 12, 2013), [http://www.cdc.gov/biomonitoring/Lead\\_Fact\\_Sheet.html](http://www.cdc.gov/biomonitoring/Lead_Fact_Sheet.html) (“No safe blood lead level has been identified.”) (attached as Ex. 41).

<sup>47</sup> U.S. EPA, Lead and Copper Rule: A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act (Oct. 2005), [http://www.epa.gov/safewater/schools/pdfs/lead/qrg\\_lcr\\_schools.pdf](http://www.epa.gov/safewater/schools/pdfs/lead/qrg_lcr_schools.pdf) (attached as Ex. 42).

<sup>48</sup> Lead in Drinking Water, Wisc. Dep’t of Nat. Res. 2008), <http://dnr.wi.gov/topic/drinkingwater/documents/forms/lead.pdf> (attached as Ex. 43). Several cases have also been reported in which infant formula constituted from lead-contaminated tap water was determined to be the sole cause of childhood lead poisoning. *See, e.g.,* Michael Shannon & John W. Graef, *Lead Intoxication: From Lead-contaminated Water Used to Reconstitute Infant Formula*, 28 *Clinical Pediatrics* (8) 380, 381 (1989) (attached as Ex. 44).

<sup>49</sup> Ronnie Levin, et al., *Lead Exposures in U.S. Children, 2008: Implications for Prevention*, 116 *Environ. Health Perspect.* (1) 1285-93 (2008), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569084/> (attached as Ex. 45); CDC, *Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water—District of Columbia, 2004*, 53 *MMWR Weekly* (No. 12) 268-70 (Apr. 2, 2004), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5312a6.htm> (attached as Ex. 46).

<sup>50</sup> Marc Edwards, *Fetal Death and Reduced Birth Rates Associated with Exposure to Lead-Contaminated Drinking Water*, 48 *Env’tl. Sci. & Tech.* 739-40 (2013), available at <http://pubs.acs.org/doi/pdf/10.1021/es4034952> (attached as Ex. 47).

<sup>51</sup> U.S. EPA, Basic Information about Lead in Drinking Water, *supra* note 11.

<sup>52</sup> *See* Email from Jennifer Crooks, U.S. EPA, to Mike Prysby, MDEQ (Feb. 26, 2015) (“[T]here are no safe levels of lead in drinking water.”) (attached as Ex. 48); City of Flint Issues Lead Advisory, *supra* note 13 (recognizing that “no level of lead is considered safe”). Because no safe level of lead in blood has been identified, EPA promulgated a Maximum Contaminant Level Goal for lead in drinking water of zero, reflecting EPA’s determination that a threshold of zero lead in drinking water is the level at which “no known or anticipated adverse effects” on human health will occur, allowing for a margin of safety. *See* 40 C.F.R. §§ 141.2, 141.51(b).

Petitioners have reason to be concerned about the health impacts of increased exposure to lead in drinking water. A recent study conducted by researchers at Flint's Hurley Medical Center found that the rate of Flint children with elevated blood lead levels is rising. An analysis of 1746 Flint children under five years old showed that the proportion of children with elevated blood lead levels has *doubled* in the time since the City changed its drinking water source.<sup>53</sup> The study found that the rate of elevated blood lead levels in children under fifteen months is 2.5 times greater after the switch to Flint River water than the rate before the switch.<sup>54</sup> The study found no corresponding statistically significant increase in the rate of elevated blood lead levels of children living in Genesee County outside of Flint.<sup>55</sup> Data released by the State confirm that the percentage of Flint children under sixteen with elevated blood levels has risen (from 2.37% to 3.21%) since the switch to Flint River water.<sup>56</sup>

This increased rate of children with elevated blood lead levels is even more alarming because the Flint community may be more at risk for elevated blood lead levels and lead poisoning than communities elsewhere in the country. Michigan ranks fifth worst in the country for harmful exposures to lead.<sup>57</sup> Low income is a risk factor for lead poisoning, and the proportion of families living below the poverty level in Flint is more than three times the national proportion (35.5% in Flint vs. 11.3% nationally in 2013 estimates).<sup>58</sup> Living in housing built before 1978 (when the federal ban on high-lead paint went into effect) is also a risk factor, because dust from lead paint continues to be a major source of lead exposure in children.<sup>59</sup> Nearly 90% of housing in Flint was built before

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<sup>53</sup> Pediatric Lead Exposure in Flint, MI: Concerns from the Medical Community (PowerPoint Presentation), *available at* <http://flintwaterstudy.org/2015/09/pediatric-lead-exposure-presentation-from-hurley-medical-center-doctors-concerning-flint-mi/> (attached as Ex. 49).

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> Kristi Tanner & Nancy Kaffer, *State data confirms higher blood-lead levels in Flint kids*, Detroit Free Press, Sept. 29, 2015, <http://www.freep.com/story/opinion/columnists/nancy-kaffer/2015/09/26/state-data-flint-lead/72820798/> (attached as Ex. 50).

<sup>57</sup> Centers for Disease Control and Prevention, *Public Health in Action: Lead Poisoning Prevention in Michigan* (last updated Feb. 4, 2013), [http://www.cdc.gov/nceh/information/healthy\\_homes\\_lead.htm](http://www.cdc.gov/nceh/information/healthy_homes_lead.htm) (attached as Ex. 51).

<sup>58</sup> 2009-2013 American Community Survey 5-year Estimates, 2013, *available at* <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml> (enter "Flint, MI" in the box under "Community Facts," click on "Income" on left-side bar, then click "Selected Economic Characteristics" under "2013 American Community Survey") (table attached as Ex. 52 compares data from Flint, MI to Michigan and the United States).

<sup>59</sup> See, e.g., Am. Cancer Soc'y, *Lead, Lead in the Environment*, <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/lead> (last updated May 27, 2014) (characterizing lead paint as a "major" source of exposure) (attached as Ex. 53).

1978.<sup>60</sup> These factors show that the risks to Flint residents from lead exposure may be particularly acute.

The monitoring data showing high lead levels in Flint drinking water, combined with the well-known serious adverse health impacts of lead exposure, demonstrate “a substantial likelihood that contaminants capable of causing adverse health effects will be ingested by consumers if preventive action is not taken.”<sup>61</sup> These circumstances constitute an imminent and substantial endangerment warranting emergency federal action.<sup>62</sup>

#### **IV. Neither the City nor MDEQ has acted to protect Flint residents from continuing health risks of exposure to high lead levels in drinking water**

Federal emergency action is necessary because neither the City nor MDEQ has adequately addressed the danger to Flint residents from lead in their drinking water. To date, the local and state response to lead concerns has been, at best, nominal and ineffective.<sup>63</sup>

The state-appointed emergency manager and MDEQ allowed the City to begin using the Flint River as its water source without adequately ensuring that the system would continue to “operate and maintain optimal corrosion control treatment,” as required by the SDWA.<sup>64</sup> The Lead and Copper Rule requires states to “review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system.”<sup>65</sup> But as of March 28, 2014, three weeks before the City planned to start using Flint River water, the City had not even submitted an application to the State for approval to make the change.<sup>66</sup> A month later, MDEQ had approved the change without requiring the City to implement corrosion control measures, as required by the Lead and

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<sup>60</sup> 2012 Annual Data Report on Blood Lead Levels of Children in Michigan 26 (Apr. 2013), [https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels\\_419508\\_7.pdf](https://www.michigan.gov/documents/mdch/2012AnnualDataReportOnBloodLeadLevels_419508_7.pdf) (attached as Ex. 54); see CPSC, *CPSC Announces Final Ban on Lead-Containing Paint* (Sept. 2, 1977), <http://www.cpsc.gov/en/Recalls/1977/CPSC-Announces-Final-Ban-On-Lead-Containing-Paint/> (attached as Ex. 55); Maj. Thomas F. Zimmerman, *The Regulation of Lead-Based Paint in Air Force Housing*, 44 Air Force L. Rev. 169, 175 (1998).

<sup>61</sup> H.R. Rep. No. 93-1185, 1974 U.S.C.A.N. 6454, 6488 (July 10, Aug. 15, 1974) (defining when an endangerment may be considered substantial).

<sup>62</sup> See *Trinity Am. Corp. v. U.S. E.P.A.*, 150 F.3d 389, 399 (4th Cir. 1998) (imminent and substantial endangerment found when “dangerous levels of [a] contaminant[] exist in [the] water supply,” and that the contaminant “pose[s] a great risk to human health”).

<sup>63</sup> See *id.* at 397 (explaining that “minor” and “ineffective” action by state and local authorities does not “strip EPA of its statutory emergency powers”).

<sup>64</sup> 40 C.F.R. § 141.81(b).

<sup>65</sup> 40 C.F.R. § 141.81(b)(3)(iii).

<sup>66</sup> Dominic Adams, *State says Flint hasn’t applied for permit to use river as drinking water source*, Michigan Live, Mar. 28, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/03/state\\_says\\_flint\\_hasnt\\_applied\\_1.html](http://www.mlive.com/news/flint/index.ssf/2014/03/state_says_flint_hasnt_applied_1.html) (attached as Ex. 56).

Copper Rule.<sup>67</sup> When EPA inquired about what the City was doing to control corrosion, MDEQ falsely stated that the City was already operating an "Optimized Corrosion Control Program."<sup>68</sup> The opposite was true: as the State later admitted, the City had not implemented any corrosion control treatment measures (and still has not done so).<sup>69</sup>

Further, evidence indicates that the City and MDEQ are either unwilling or unable to conduct tap water monitoring for lead in compliance with federal regulations. As discussed above, statements by a Flint Utilities Administrator suggest that the City did not identify a sampling pool prior to conducting monitoring, as federal law expressly requires. Instead, the Department of Public Works "just thr[ew] out bottles everywhere just to collect as many [samples] as we c[ould]."<sup>70</sup> The City even asked its own employees and their "family/friends who live in the city" to participate in the sampling group.<sup>71</sup>

The City also may not have complied with requirements for targeting high-risk homes, including the requirement that 50% of sampled sites contain lead pipes or copper pipes with lead solder.<sup>72</sup> The City's Utilities Administrator conceded that the City was "not really" able to determine that every residence sampled had lead pipes, even though this was what the City affirmatively reported to MDEQ in a monitoring compliance report.<sup>73</sup> Further, the City's monitoring compliance report shows that the City did not meet the deadline to submit its monitoring results and did not comply with the requirement to sample the same sites across monitoring periods.<sup>74</sup> During the January to June 2015 monitoring period, the City initially sought to obtain 100 samples.<sup>75</sup> After the City failed to collect that number, MDEQ decided that only sixty samples were required.<sup>76</sup>

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<sup>67</sup> See 40 C.F.R. § 141.81(a)-(b).

<sup>68</sup> See Email from Stephen Busch, MDEQ, to Jennifer Crooks and Miguel Del Toral, U.S. EPA (Feb. 27, 2015) ("The City of Flint ... [h]as an Optimized Corrosion Control Program[.]") (attached as Ex. 57).

<sup>69</sup> Email from Pat Cook, MDEQ, to Miguel Del Toral, U.S. EPA (Apr. 24, 2015) ("Flint is not currently practicing corrosion control treatment at the [Water Treatment Plant].") (attached as Ex. 58).

<sup>70</sup> See 40 C.F.R. § 141.86(a)(1); *Thirst for Truth: Who's to Blame for Flint Water Crisis?* (ACLU of Michigan, Jul. 28, 2015), available at <https://www.youtube.com/watch?t=9&v=LT09irD2f0Y> (statement of Michael Glasgow, Utilities Administrator).

<sup>71</sup> Email from Michael Glasgow (June 1, 2015) (attached as Ex. 59).

<sup>72</sup> 40 C.F.R. § 141.86(a)(8).

<sup>73</sup> *Thirst for Truth*, supra note 70 (statement of Michael Glasgow, Utilities Administrator, at 5:30-5:45).

<sup>74</sup> City of Flint Water Plant, Lead and Copper Report and Consumer Notice of Lead Result Certificate for Community Water Supply (Jul. 28, 2015) (checking "no" box in response to question asking whether City used the same sampling sites as the previous monitoring period) (attached as Ex. 60); see 40 C.F.R. §§ 141.86(b)(4); 141.90(a)(1).

<sup>75</sup> See Email from Adam Rosenthal, MDEQ, to Michael Glasgow, Brent Wright, City of Flint (June 25, 2015) (attached as Ex. 61).

<sup>76</sup> Compare *id.* ("We hope you have 61 more lead/copper samples collected and sent to the lab by 6/30/15, and that they will be below the AL for lead. As of now with 39 results,

ongoing maintenance. Pre-flushing is also imperfect, does not always eliminate lead, and may be prohibitively expensive for many families given Flint's high water rates.<sup>80</sup>

The City's and State's apparent lapses in regulatory compliance, and their failure to take responsibility for responding to the City's lead problems, demand federal intervention.

**V. EPA should act immediately to adequately address the public health emergency created by lead in Flint drinking water**

Petitioners urge EPA to take all actions necessary to abate the endangerment presented by lead in Flint's drinking water, and to inform Flint residents about the potential hazards of drinking the City's tap water. At minimum, Petitioners request that EPA:

- Immediately order the City and MDEQ to reconnect Flint's water system with water from the Detroit Water and Sewerage Department. EPA should work with the City of Flint, MDEQ, and the Detroit Water and Sewerage Department to facilitate this renewed connection as soon as possible.
- Immediately provide Flint residents with an alternative, free source of safe drinking water that meets EPA standards. This may include providing customers with free bottled water or providing (and routinely maintaining) free in-home and replacement filters that are certified to remove lead by NSF International.<sup>81</sup>
- Immediately order the City to advise all Flint water customers to avoid consuming unfiltered water from the City's water system. The notice should warn customers not to use unfiltered Flint water to make baby formula or for children. The notice should inform customers that if they have no alternative water source, they should flush Flint water for a *minimum* of five minutes before

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<sup>80</sup> Dominic Adams, *Flint monthly water and sewer bills highest in Genesee County by \$35*, Michigan Live, June 1, 2014, [http://www.mlive.com/news/flint/index.ssf/2014/06/post\\_386.html](http://www.mlive.com/news/flint/index.ssf/2014/06/post_386.html) (citing Flint bills at \$140/month) (attached as Ex. 69). A state-court judge recently ruled that the Emergency Manager's decision to significantly raise water rates was unlawful. Ron Fonger, *Judge orders Flint to cut water rates 30% in sweeping injunction*, Michigan Live, Aug. 7, 2015, [http://www.mlive.com/news/flint/index.ssf/2015/08/flint\\_ordered\\_to\\_cut\\_water\\_rat.html](http://www.mlive.com/news/flint/index.ssf/2015/08/flint_ordered_to_cut_water_rat.html) (attached as Ex. 70).

<sup>81</sup> See U.S. EPA, Planning for an Emergency Drinking Water Supply (June 2011) (provision of bottled water is a "common federal response" in emergencies) (attached as Ex. 71); cf. 40 C.F.R. § 141.101 (allowing public water systems to use bottled water on a temporary basis "to avoid unreasonable risk to health"); U.S. EPA, Memorandum re: Update on Providing Alternative Water Supply as Part of Superfund Response Actions (Sept. 24, 2010), <http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/610732.pdf> (allowing delivery of bottled water on a temporary basis in certain circumstances in CERCLA removal or remediation actions) (attached as Ex. 72).



use. EPA should prohibit the City from charging water customers for this flushing time.

- Use its authority under 40 C.F.R. §§ 142.19 and 141.82(i) to review MDEQ's determinations concerning corrosion control requirements for the Flint water system, and issue a federal order establishing the optimal corrosion control treatment requirements for the Flint water system and requiring Flint to immediately comply with these requirements.
- Order the City to conduct continued monitoring for lead and copper in six-month periods in accordance with the procedures set forth in 40 C.F.R. § 141.86. EPA should directly oversee the City's monitoring by ordering the City to submit a Quality Assurance Project Plan (QAPP) to ensure that all information, sample collection, analytical data and resulting decisions are technically sound, scientifically valid, and properly administered. EPA must approve the City's QAPP before the City conducts any additional monitoring. EPA should prohibit the City from conducting reduced monitoring under 40 C.F.R. § 141.86(d)(4) for at least five years.
- Order the City to comply with the public education and supplemental monitoring requirements in 40 C.F.R. § 141.85, including but not limited to immediately notifying consumers of the results of tests completed at their homes or places of business, and providing the public education, monitoring, and notification established in those rules.
- Order any other additional relief that EPA determines is "necessary to protect the health" of Flint residents from lead contamination in drinking water.

## VI. Conclusion

For the foregoing reasons, Petitioners respectfully request that EPA take the actions necessary to abate the imminent and substantial endangerment to Flint residents' health from lead contamination in their drinking water.

Dated: October 1, 2015

Respectfully Submitted,

/s/ Pastor Allen Overton  
Pastor Allen Overton  
**COALITION FOR CLEAN WATER**

/s/ Pastor Alfred Harris  
Pastor Alfred Harris  
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/s/ Melissa Mays  
Melissa Mays  
LeeAnne Walters  
**WATER YOU FIGHTING FOR**

/s/ Claire McClinton  
Claire McClinton  
**DEMOCRACY DEFENSE LEAGUE WATER TASK FORCE**

/s/ Marc Edwards  
Marc Edwards, CEE  
Siddhartha Roy  
**FLINT WATER STUDY TEAM**

/s/ Dawn Kettinger  
Dawn Kettinger  
**MICHIGAN NURSES ASSOCIATION**

/s/ Yvonne M. White  
Yvonne M. White  
**NAACP - Michigan State Conference**

/s/ Jeffrey L. Edison  
Jeffrey L. Edison  
**MICHIGAN CHAPTER OF THE NATIONAL  
CONFERENCE OF BLACK LAWYERS**

/s/ Brooke Tucker

Brooke Tucker

Michael Steinberg

**AMERICAN CIVIL LIBERTIES UNION OF MICHIGAN**

2966 Woodward Ave.

Detroit, MI 48201

(313) 578-6800

/s/ Dimple Chaudhary

Dimple Chaudhary

Anjali Waikar

Sarah C. Tallman

Evan Feinauer

**NATURAL RESOURCES DEFENSE COUNCIL**

20 N. Wacker Drive, Suite 1600

Chicago, IL 60606

(312) 663-9900

## Questions Info for Flint Meeting on Friday 1/8/2016

1. November Monthly Operation Report was received by DEQ on 12/10/2015
  - This covered period on DWSD water before Flint orthophosphate boosting
  - Phosphate, pH and Chlorine residual adequate
  - Water Quality Parameters were collected as requested
2. January 1, 2016 – June 30, 2016 lead and copper compliance monitoring
  - City's status regarding identification of 180 Tier 1 sites
    - Provide addresses to DEQ for processing results
  - Protocols for customer requested sample
    - Confirm Tier criteria of site prior to sample collection
    - If Tier 1 and proper, include in compliance determination per Rules
  - 60 sites is minimum required
  - Reporting form, provide documentation used to determine Tier I criteria
3. Lead Service Line Information
  - Response provided to DEQ on 12/10/2015
  - Response was incomplete
  - Information provided confirms reporting violation (notice to be mailed)
4. EPA FTF 15-5
  - Water Quality Goals (See Attached Info)
  - Plant Performance
    - Means to supply KWA water (construction of parallel raw water line?)
  - Potential operational and mechanical startup issues
    - Use Quarterly Test Runs to address issues
  - Proficient Staffing
    - City should provide a Water Plant Operational Staffing Schedule with associated responsibilities
  - Bench Scale Jar Tests
    - Coordinate parallel testing with Genesee County Pilot Study
  - Pipe Rigs
    - EPA Status
    - DEQ staff attendance for training purposes

## Flint Water Interagency Coordinating Committee Subcommittees

### Incident Action Plan Subcommittee

Chair - Capt. Chris Kelenske  
Harvey Hollins

### Water Quality Subcommittee

Chair - Keith Creagh  
Nick Lyon  
Dr. Laura Sullivan  
Dr. Marc Edwards  
Dr. Yanna Lambrinidou  
Mark Valacak  
EPA

#### Suggested Tasks

- ✓ Response tactics and flow process
- ✓ Testing
  - \* Lead and Copper
  - \* Other Contaminants and Disease Transmission
- ✓ Monitoring and reporting entry of contagions

### Water Infrastructure Integrity Subcommittee

Chair - Keith Creagh  
Jim Koski  
Dr. Laura Sullivan  
Dr. Marc Edwards  
Jamie Curtis  
Natasha Henderson  
American Water Works Association  
EPA

#### Suggested Tasks

- ✓ Reliability Study
- ✓ Infrastructure upgrade/replacement
- ✓ Lead Line Replacement

### KWA Subcommittee

Chair - Khouri  
Keith Creagh  
Harvey Hollins  
Natasha Henderson  
Jamie Curtis  
Larry Steckelberg  
EPA

#### Suggested Tasks

- ✓ Benefit-Cost Analysis
- ✓ Transition
- ✓ Safety
- ✓ Flint Water Treatment Plant Upgrade
- ✓ Rate Structure


- 1) CONDUCT ASSESSMENT OF DIST. SYSTEM
- 2) CONSIDER REENT-SIZING
- 3) DETERMINE UNKNOWN LINES
- 4) ASSESS MGT SYSTEM
- 5) REPLACE CRITICAL COMPONENTS OF DIST.

DEVELOP A COMPREHENSIVE  
LEAD LINE REPLACEMENT  
PROGRAM THAT TAKES  
WATER AGENTS' NEEDS  
ALL NEEDS INTO  
CONSIDERATION  
SUCH AS AT  
RISK POPULATIONS  
& CONSTRUCTION  
COORDINATION

CREATE PROTOCOLS  
FOR ADDRESSING  
CONCERNS REGARDING  
DISINFECTION RESIDUALS  
~~DETECT~~ ~~SUMMER~~ ~~PROCESSES~~

LEGIONELLA  
LEAD

Direct A  
Multi-Dimensional  
APPROACH TO  
ADDRESSING LEAD IN VHS  
~~GROUP~~ BEYOND  
THE REQUIREMENT  
OF THE  
LCR

- 
- 1) ESTABLISH CRITERIA  
FOR LIFTING  
HEALTH ALBU
  - 2) ADDRESS CONCERNS  
REGARDING LEAD
  - 3) ~~LEAD~~
  - 4) LEGIO

Cc: Sygo, Jim (DEQ)  
Subject: ODWMA/LEG00237/Phelps/FOIA

Please assign to ODWMA. We can meet to discuss if they would like.

Thanks  
Maggie

Begin forwarded message:

From: Phil Phelps <philphelps@house.mi.gov>  
Date: November 5, 2015 at 4:47:36 PM EST  
To: "pallonem@michigan.gov" <pallonem@michigan.gov>  
Cc: Allison Glasson <AMGlasson@house.mi.gov>, "kflynn@millercohen.com" <kflynn@millercohen.com>  
Subject: Legislative Inquiry

Maggie,

~~While I am not withdrawing my FOIA, I am willing to clarify my intent informally as a legislative inquiry. I would like all communications between the City of Flint and the MDEQ referencing the use of the Flint river as a Water source including copies of emails. I would also like all internal communications referencing Flint drinking water between individuals employed by the MDEQ or working on their behalf. I would also like any communications between the MDEQ and all other government employees or elected and appointed officials at the state and federal level if anything to do with Flint drinking water was referenced. I would also like any documentation your department has on Flint using the Flint River as its primary water source, as well as any studies or information on the quality of the Flint River or any reference to contamination or treatment of the Flint River as a primary source. For all of the information requested please also include any and all drafts of documents and communications, even if it was a draft for a document that was never published or made public. For all of the requests listed above, please send information that was created or drafted on or after January 1<sup>st</sup>, 2011.~~

Thank you,  
Phil Phelps

9/30 - 11/05  
FOR GEORGE

12/30/15

Copies to:

orig:

Director Keith Creagh

Jim Sygo

Maggie Pallone

Madhu Anderson

Amy Epkey

George Krisztian

2-1 AG's File

3-1 MI Legislative File

Executive Division - City of Flint File (MBT)

We received the attached copy from the Attorney General's Office.

If you feel this needs further distribution, please let me know or handle as you feel appropriate.

Thank you.

Mary Beth



STATE OF MICHIGAN  
DEPARTMENT OF ATTORNEY GENERAL



BILL SCHUETTE  
ATTORNEY GENERAL

P.O. Box 30212  
LANSING, MICHIGAN 48909

December 22, 2015

Honorable Sheldon A. Neeley  
State Representative  
State Capitol  
P.O. Box 30014  
Lansing, MI 48909-7514

Re: Flint drinking water issues

Dear Representative Neeley:

The Attorney General wanted me to express his appreciation for taking the time to speak to him and his team this afternoon regarding the drinking water issues in the City of Flint. He was pleased to hear your perspective on this important public health issue.

As he noted on the call, the Attorney General has been monitoring this situation since he first became aware of Flint's drinking water issues, and shares your concern with the health of Flint's citizens and their access to a safe water supply. That is why he fully supported the decision in October to return Flint to the Detroit water system, and provide state funding for that purpose.

On the call today, and in your prior letter, you expressed concern about state and city officials' responses to the problems with Flint's drinking water that followed the switch from the Detroit water system to the Flint River. As we discussed, in the last few months several actions have been taken related to the Flint water situation:

- The Auditor General, who was already conducting an audit of the Department of Environmental Quality's drinking water program, expanded that audit to specifically review that program's response to the problems with Flint's drinking water.
- Governor Snyder created the Flint Water Task Force to independently review the state and local governments' response to the problems with Flint's drinking water.
- The U.S. Environmental Protection Agency announced it would review the response to the problems with Flint's drinking water at the request of Congressman Kildee.

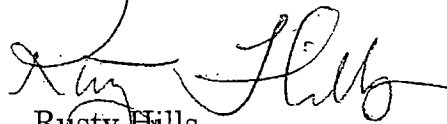
December 22, 2015

- The U.S. Environmental Protection Agency issued a memorandum on November 3, 2015 stating that there were "differing possible interpretations" of the relevant federal Safe Drinking Water Act regulations, "which may have led to some uncertainty with respect to the Flint water system." As a result, the agency clarified the application of those regulations going forward.
- The U.S. Environmental Protection Agency's National Drinking Water Advisory Council is conducting hearings to determine if changes are necessary to the Safe Drinking Water Act regulations in order to more fully protect individuals from lead in drinking water.
- A federal class action lawsuit was filed against the Governor, the State of Michigan, and several individual Department of Environmental Quality employees, along with the City of Flint, its emergency managers, and several of its individual employees, claiming that these parties violated federal drinking water regulations.
- Several parties sent a notice of intent to sue to the State, asserting that they would file a lawsuit under the federal Safe Drinking Water Act.

As the Attorney General explained, given the multiple reviews by federal and state agencies, and the pending and potential federal court actions, we do not believe it necessary to conduct an additional investigation. But this office will continue to actively monitor the situation and review any additional information brought forward. We also look forward to a continuing dialogue with your office, including speaking with Mr. Edwards about the bills you identified in our call.

Again, thank you for taking the time to discuss this important issue with the Attorney General.

Sincerely,



Rusty Hills  
Senior Advisor  
Executive Division  
(517) 373-8060

GJH:bmh

cc: ~~Governor Rick Snyder~~  
✓ Dan Wyant, DEQ Director

EPA Emergency Administrative Order Task Worksheet  
Updated: 01/28/2016 1100

DATE of Initiation	Named Party	Chapter	Task	DUE Date	Status	Recommended Action	Assigned Personnel	Comments
01/21/2016	MDEQ/ Flint	55	Shall cooperate with EPA for conducting sampling and other diagnostic activities	01/21/2016	Ongoing		George Kristzian	Mark Durno, USEPA
01/21/2016		60	Shall not switch water supplies until plans have been submitted and approved.	01/21/2016	Agreed		Richard Benzie / Mary Ann Dolehanty	
01/21/2016	MDEQ	50	Intent to Comply letter	01/22/2016	Completed		Director	
01/21/2016	MDEQ	51	Public Website posting all reports, plans, weekly status reports on progress, except PII	01/26/2016	Completed / Ongoing		George Kristzian	
01/21/2016	SoM/ MDEQ	63	Shall engage a panel of experts to advise and make public recommendations to the city on steps needed to mitigate the imminent and substantial endangerment to the health of persons and general operation of the city's PWS to comply with SDWA & NPDWRs.	01/28/2016	Ongoing	Panel of experts have a meeting scheduled at 3:00 p.m. on 01/27/2016	Jim Sygo	
11/25/2015	MDEQ/ Flint	52	Is progress being made with corrosion control in the City? Respond to EPA Flint Task Force.	01/31/2016	Ongoing	Have City provide Data EPA agreed on the dosing level for orthophosphate (1/27/2016) Next step: Conduct weekly status calls with Flint Water Treatment Plant. Review Monthly Operational Reports to ensure corrosion control treatment is appropriately maintained.	Richard Benzie / Mary Ann Dolehanty	December Monthly Operation Submitted with Dosages (1st week of January)
01/21/2016	MDEQ/ Flint	53	Water Quality parameter measurements in distribution system	01/31/2016	Ongoing	Ensure City conducts/provides WQP data as required During weekly status call, discuss WQP trends/concerns.	Mike Glasgow (COP) / Richard Benzie	
01/21/2016		53	All lead in water testing results for the City since January 2013 including those not used for LCR compliance	01/31/2016	Ongoing	Provide to those maintaining website, any lead results in DEQ files for monitoring since Jan 2013 (target 01/29/2016) Ensure ongoing monitoring results continue to be provided/posted to website	Richard Benzie / Mary Ann Dolehanty	
01/21/2016		53	Identification of areas by zip code in the city with elevated blood levels	01/31/2016	Ongoing		George Kristzian to coordinate Linda Dykema	
01/21/2016	MDEQ/ Flint	54	a. Existing inventory of homes with lead service lines in Excel or similar format	01/31/2016	Ongoing		Dave Forstat	Billing address for outside City of Flint
01/21/2016		54	b. Addresses of homes that have had water service interruptions or street disturbances (e.g. water main breaks, etc.) within last year	01/31/2016	Ongoing	Get data from City Flint	Richard Benzie / Mike Glasgow (COP)	
01/21/2016		54	c. Addresses of currently unoccupied homes	01/31/2016	Ongoing	MDEQ is working with the city of Flint Department of Public Works to acquire the data and map these locations	Richard Benzie / Natasha Henderson	Question: Where is the water turned off?
01/21/2016	SoM/ MDEQ	69	Any agent, consultant or contractor used for carrying out this order shall also abide by record retention restrictions under this order.	01/31/2016	Ongoing	Comply with order and provide instruction Get a DOCUI.	Jim Sygo / Mark Ducharme	
01/21/2016	Flint	69	Any agent, consultant or contractor used for carrying out this order shall also abide by record retention restrictions under this order.	01/31/2016	Ongoing	Draft letter from DEQ to City of Flint Identify record retention elements and provide direction to all personnel, agents, or contractors that are or may become, involved with the Flint water emergency. Prepare a Documentation Unit Leader task list and identify resource(s) needed to fill the position.	Jim Sygo / Legal Team	All Agents or contractors will be required to comply with the Retention Schedule of the EPA Order
					Ongoing	Request assignment of Assistant Attorney General		
01/21/2016	Flint	59	City shall submit to DEQ the following items listed below:	02/04/2016				

EPA Emergency Administrative Order Task Worksheet  
Updated: 01/28/2016 1100

DATE of Initiation	Named Party	Chapter	Task	DUE Date	Status	Recommended Action	Assigned Personnel	Comments
01/21/2016		59	a. Submit a plan and schedule to MDEQ for designated optimal corrosion control and water quality parameters and water monitoring plans.	02/04/2016	Ongoing	Confirm with City that they will have plans completed and submitted by 02/04/2016	Richard Benzie / Mary Ann Dolehanty / staff	
01/21/2016		59	b. Submit a sampling plan for daily monitoring submitted in a weekly report.	02/04/2016	Ongoing		Richard Benzie / Mary Ann Dolehanty / staff	
01/21/2016		59	c. Submit an operations plan for the corrosion control equipment submitted in weekly format including monitoring, calibration, verification and daily monitoring of finished water corrosion control parameters.	02/04/2016	Ongoing		Richard Benzie / Mary Ann Dolehanty / staff	
01/21/2016	MDEQ/ Flint	61	City must demonstrate and MDEQ must ensure the city has necessary capable and qualified personnel to perform duties in PWS.	02/05/2016	Ongoing	MDEQ to get list of all operators employed at treatment plant and validate that they are properly certified.	Richard Benzie	
						Provide appropriate targeted training for Flint operations staff		
01/21/2016	Flint	62	City will document and share steps to develop and implement a distribution system water quality optimization plan to MDEQ.	02/20/2016	Ongoing	Establish realistic due date. MDEQ to contact national drinking water organization currently working on distribution system optimization plan framework. City to submit proposal by ( date ) MDEQ and EPA to review/evaluate proposal	Richard Benzie / Bryce Feighner / Coord with City of Flint	
01/21/2016	SoM/ MDEQ/Flint	68	After six years must notify EPA 60 calendar days prior to destruction of any data pertaining to this order	01/21/2022	Ongoing	To ensure consistency, retain all records following General Schedule #5, specifically GSS 10. When contacted regarding disposal all records will be put on a litigation hold for one additional year, and not destroyed. U.S. EPA will be notified when the additional one year litigation hold is put in place.	Susan Vorce / Jack Schinderle / Legal Team	
01/21/2016	Flint	57	Shall maintain chlorine residual in the distribution system in accordance to SDWA and National Primary Drinking Water Regulations (NPDWR)	Monthly	Completed and Ongoing	Regulatory requirements already in place for residual chlorine City required to monitor chlorine regularly and report on Monthly Operating Reports Review Chlorine residual levels in status calls weekly	Richard Benzie / staff	
01/21/2016	Flint	58	City shall continue to add corrosion inhibitors at sufficient levels	Monthly	Ongoing	Status to be discussed weekly	Richard Benzie / staff	
01/21/2016	SoM/ MDEQ	68	Preserve records and data for six years		Ongoing	To ensure consistency, retain all records following General Schedule #5, specifically GSS 10. When contacted regarding disposal all records will be put on a litigation hold for one additional year, and not destroyed. Training will be conducted by DTMB Record Center to all DEQ staff to ensure consistency and understanding.	Susan Vorce / Jack Schinderle / Legal Team	

**Michigan Department of Environmental Quality  
City of Flint Drinking Water Frequently Asked Questions**

**I. INTRODUCTION**

This document is intended to provide an overview of Michigan's implementation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), with respect to events in the city of Flint (City), Michigan.

**II. BACKGROUND**

**1. How has Flint historically obtained its drinking water?**

The water system in the City was organized and built under private ownership in 1883 as the Flint Water Works Company to pump raw water from the Flint River to their consumers. In 1903, the system was converted to a municipally-owned corporation which supplied drinking water to the City. In 1967, the City became a customer of the Detroit Water and Sewerage Department (DWSD) system.

After the switch to DWSD, the City operated its water treatment plant as a standby plant for purposes of reliability in the event of an emergency, such as an interruption in service of the single pipeline from DWSD. In the last ten years, the water treatment plant was used as an emergency backup during two weeks in 2009: June 18 through June 20 and September 10 through September 13.

As a backup emergency water treatment plant, the City was required to operate the water treatment plant quarterly to demonstrate the capability to produce drinking water in accordance with Act 399 and to keep mechanical equipment (such as valves, rubber seals, etc.) in good working order. Each quarter, the water treatment plant was test run and samples were taken of both raw water and finished water (post-filters). Since the water treatment plant was upgraded in the early 2000s, monitoring showed that the water treatment plant was performing as designed.

Contractual obligations with DWSD did not allow treated water to be put into the City's distribution system during these test runs. Treated water was discharged to the Flint River in accordance with a National Pollutant Discharge Elimination System (NPDES) Permit. The test runs were for demonstration purposes, to keep the water treatment plant operational, and staff familiar with operation in the event it was needed in an emergency.

**2. What State and Federal laws or rules exist to ensure safe drinking water is provided to City residents?**

The federal Safe Drinking Water Act (federal SDWA) is the primary law that ensures the quality of Americans' drinking water. Under the federal SDWA, the United States Environmental Protection Agency (USEPA) sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

The federal SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its

issuing construction permits; providing for the training, examination, certification and regulation of persons operating water supplies; helping systems incorporate preventive measures; and since 1996, providing financial assistance for system improvements.

**5. What is the City's role in implementing the federal SDWA and Act 399?**

State and federal programs develop regulations and perform oversight and compliance activities, but do not treat or deliver water to customers. At the local level, public and private water utilities collect, treat, and deliver drinking water to consumers in compliance with state and federal regulations.

The federal SDWA and Act 399 set up multiple barriers against contamination. These barriers include: source water protection, multiple treatment components, distribution system integrity, proper operations oversight, and public information. As the owner of a public water system, the City is responsible for knowing and following all requirements under Act 399, such as ensuring proper design, construction, operations and maintenance, so that contaminants in tap water do not exceed the standards established by law. The City treats the water, and must test its water routinely for specified contaminants and report the results to the DEQ. If a water system is not meeting these standards, it is the water supplier's responsibility to notify its customers.

The federal SDWA and Act 399 recognize that customers have the right to know what is in their drinking water and where it comes from. The City, like all water suppliers, must notify consumers when there is a problem with water quality.

The City submits samples of its water for laboratory testing (monitoring) to verify the water it provides to residents meets all federal and state standards. How often and where samples are taken varies from system to system and from contaminant to contaminant. The DEQ provides an annual monitoring schedule to the City setting forth these requirements.

In addition, the City is required to employ properly certified water operators that are trained and experienced to operate the treatment and distribution systems associated with the City's water system.

**6. What approvals were needed from the DEQ in order for the City to begin using its water treatment plant full time?**

The City had long ago been issued construction permits for raw water pumps to withdraw water from the Flint River and the City was grandfathered under the water withdrawal program (Part 327, Great Lakes Preservation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended), as were all existing community public water systems at that time. There were no additional DEQ permissions or authorizations required under Act 399 because the City already had approval to use the water treatment plant.

Under Act 399, there are no licenses or permits required to operate public water systems. The City did apply for and obtained two construction permits prior to the water treatment plant changing from an emergency backup plant to full-time

the City purchased water from DWSD. Thus, pH monitoring provided no indication of a change in water corrosivity.

#### **IV. E. COLI AND TOTAL COLIFORM BACTERIA VIOLATIONS**

##### **1. What caused the *E. coli* and total coliform bacteria violations experienced by the City in August and September 2014?**

A number of factors, primarily related to distribution system operation and maintenance, likely contributed to the Boil Water Advisories in the City during August and September 2014 triggered by exceedances of bacteria standards in limited areas of the distribution system. In addition, the coliform detections were confined to less than 20 percent of the water system. Had the detections been the result of a failure in treatment, detections would have been expected throughout the City rather than in such a limited geographic area.

Instead, the violations seem to have been caused by other factors such as aging infrastructure. The City's water distribution system has suffered from a lack of infrastructure investment and asset management. Most of the City's over 550 miles of water mains are now over 75 years old, and constructed of unlined cast iron piping. This cast iron pipe is subject to tuberculation, which thins and weakens the pipe walls in some areas and causes a buildup of sediment and debris on the pipe walls in other areas. Tuberculation can lead to water quality issues as well as reduced flows and pressures. Tuberculation also encourages the development of biofilms. Biofilm growth may occur more frequently in areas where little or no disinfectant is maintained.

The City has also experienced decades of a declining customer base and water use, with vacant homes, commercial businesses, and industrial property. Declining water use leads to excess residence time (water age) within the City's distribution pipes and water storage facilities, accelerating tuberculation, biofilm growth, and reductions of disinfectant concentration in the distribution system. While the City has recently seen an infusion of funding for blight removal, contractors using fire hydrants to complete this work have been known to cause hydraulic disturbances that dislodge and suspend settled debris, which may contribute to the bacterial contamination. These hydraulic disturbances were also believed to be a source of the aesthetic water quality complaints both the City and the DEQ were receiving.

The winter of 2013-2014 was also one of the coldest experienced by the water system. The City, which historically has unaccounted water losses of over 30 percent, saw even greater losses since February 2014 due to an increase in cold weather-related water main breaks and leaks (City personnel reported 400 water main breaks in calendar year 2014, with greater than 50 percent in the winter quarter). The City has also been lacking a formal maintenance program for its more than 7,250 valves, which are critical in limiting the areas impacted during water main repairs. As an example, two valves on the transmission line used to supply the area of the 2014 Boil Water Advisories were found to be closed during the City's investigation of possible sources, causing much longer residence times, reduced disinfectant concentrations, and reduced pressures – all potential avenues for contamination to enter a distribution system.

each of these steps together, a normal response period to rescind a Boil Water Advisory under these circumstances would be expected to take 3 to 4 days.

## **V. TOTAL TRIHALOMETHANES (TTHM) VIOLATIONS**

### **1. What caused the TTHM violations experienced by the City beginning in late summer 2014?**

Disinfectants are an essential element of drinking water treatment because of the barrier they provide against waterborne disease-causing microorganisms. However, disinfection byproducts form when disinfectants used to treat drinking water react with naturally occurring organic materials in the water (e.g., decomposing plant material). The formation of disinfection byproducts continues to occur as water travels throughout water distribution systems.

A major challenge for water suppliers is how to provide protection from pathogens while simultaneously minimizing health risks to the population from disinfection byproducts. Total Trihalomethanes (TTHM – chloroform, bromoform, bromodichloromethane, and dibromochloromethane) and halogenated acetic acids (HAA5 – monochloro-, dichloro-, trichloro-, monobromo-, dibromo-) are widely occurring classes of disinfection byproducts. The amount of TTHM and HAA5 in drinking water can change depending on the season, water temperature, amount of chlorine added, the amount of plant material in the water, and a variety of other factors. All community water systems that chemically disinfect or purchase water that has been chemically disinfected are required to monitor for disinfection byproducts.

The Flint River has higher levels of organic material than water in the Great Lakes and as a result, the water produced by the City developed higher disinfection byproducts than the water purchased from DWSD. Because the water treatment plant was previously operating intermittently, it was not possible to predict disinfection byproduct levels at distribution system compliance points until the City began relying on its water treatment plant continuously.

As mentioned previously, the City became aware that there were numerous broken valves and closed valves that should have been open in the distribution system. At that time, the City also began a mapping effort to identify "water age" in the distribution system. The longer the residence time or "water age" the greater the opportunity for the formation of disinfection byproducts.

### **2. How were the violations detected? What was the DEQ's response?**

Disinfection byproducts are monitored at eight sites throughout the distribution system. A locational running annual average is calculated for each individual site. Because TTHM and HAA5 maximum contaminant levels are calculated based on a running annual average at specific distribution system locations, the actual violation of the standard did not occur until the fall of 2014. However, because it was apparent in the summer of 2014 that the standard would eventually be exceeded; the DEQ asked the City to proactively implement measures to address the problem before the violation required them to do so.



## **2. What is the Lead and Copper Rule?**

On June 7, 1991, the USEPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule (also referred to as the LCR). The treatment technique for the rule requires systems to monitor drinking water at customer taps. If the 90th percentile for lead exceeds an action level of 15 parts per billion (ppb) or the 90th percentile for copper exceeds an action level of 1.3 parts per million (ppm), the system must undertake a number of additional actions to control corrosion. If the action level for lead is exceeded, the water supply must also inform the public about steps they should take to protect their health and the water supply may have to replace lead service lines under their control.

## **3. What is the lead action level?**

For most contaminants, the USEPA sets an enforceable regulation called a maximum contaminant level based on the maximum contaminant level goal. Maximum contaminant levels are set as close to the maximum contaminant level goals as possible, considering cost, benefits, and the ability of public water systems to detect and remove contaminants at the water treatment plant using suitable treatment technologies. Because lead contamination of drinking water often results from corrosion of the plumbing materials belonging to water system customers, the USEPA established a treatment technique rather than a maximum contaminant level for lead. A treatment technique is an enforceable procedure or level of technological performance which water systems must follow to control a contaminant. Although the maximum contaminant level goal for lead is zero, based upon the above factors, the USEPA has established the action level for lead at 15 ppb.

The treatment technique regulation for lead requires water systems that produce drinking water to control the corrosivity of the water. The regulation also requires systems to collect customer tap samples from sites served by the system that are more likely to have plumbing materials containing lead. If the 90th percentile action level for lead is exceeded, then water systems are required to take additional actions including:

- Optimizing corrosion control treatment (for water systems serving greater than 50,000 people that have not fully optimized corrosion control).
- Educating the public about lead in drinking water and actions consumers can take to reduce their exposure to lead.
- Replacing the portions of lead service lines (lines that connect distribution mains to customers) under the water system's control.

## **4. Did DWSD have optimized corrosion control treatment?**

After the LCR passed in 1991, DWSD and all of its consecutive customer systems conducted two rounds of monitoring for lead and copper. Copper levels were well below action level limits, but lead levels exceeded the action level of 15 ppb for DWSD and many of its customer communities. As a result, DWSD installed corrosion control treatment. DWSD performed a corrosion control study and concluded that they could reduce the corrosivity of the water by the addition of an orthophosphate, a corrosion inhibitor.

**8. What was the result of the second round of monitoring conducted by the City?**

The second 6-month round of lead and copper monitoring conducted by the City ended on June 30, 2015. Sixty-nine samples that complied with the site selection criteria were submitted and the 90th percentile lead level was calculated to be 11 ppb. The conclusion from these results was that the City, while in compliance with the action level, exceeded the level required to be deemed as having optimized corrosion control.

**9. Why was the City required to collect 100 compliance samples for lead and copper in the first 6-month monitoring period of July through December of 2014 and then only 60 compliance samples in the second 6-month period of January through June of 2015?**

The number of compliance samples required for lead and copper is based upon the population served by the water system as identified in the table below, taken from Rule 325.10710a of Act 399.

Supply Size (Number of People Served)	Number of Sites (Standard Monitoring)	Number of Sites (Reduced Monitoring)
More than 100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
Fewer than 101	5	5

The number of samples the City was required to collect in the first round of monitoring after they began relying on the Flint River was based on the 2010 census, which listed the City's population as more than 100,000 residents. In March of 2015, the City provided updated information that indicated the City's population had decreased to less than 100,000. Therefore, they were only required to collect 60 samples. There is no rule prohibiting the collection of additional compliance samples – only establishing a minimum number necessary.

**10. What actions did the DEQ order the City to undertake after the second round of monitoring?**

While the City's LCR compliance monitoring continued to meet action level requirements, the City exceeded the level required to be deemed as having optimized corrosion control. Following receipt of the City's compliance monitoring results, the DEQ sent a letter on August 17, 2015, requiring the City to install corrosion control treatment.

Under the LCR, the City has 6 months to let the DEQ know whether it intends to conduct a study, then 18 months to perform the study and make its recommendation, and 24 months to complete installation of the selected corrosion control. The DEQ requested the City accelerate this schedule. The City submitted plans and specifications to install corrosion control treatment and a construction permit was issued by the DEQ on October 28, 2015. The City is in the process of installing the necessary equipment and procuring the appropriate chemicals. Treatment is

November 24, 2015

- However, that pattern was not terribly different from what we saw in the previous three years; especially in 2011-2012 (we are working with our Epidemiologist to statistically verify any significant differences).
- We commonly see a 'seasonal effect' with lead, related to people opening and closing windows more often in the summer, which disturbs old deteriorating paint on the windows, sills and sashes. Window fans frequently blow and spread the lead dust from the deteriorating paint to other parts of the room/house. We suspected that the summer data spike may be related to this effect.
- If the home water supply lines and/or river water were contributing to elevated blood lead tests, we expected that the increased rates would extend beyond the summer, but they drop quite a bit from September to October, stayed low over the winter, and are just starting to tail up again in the spring of 2015."

This e-mail from DHHS in concert with the completion of two 6-month rounds of lead compliance sampling data indicating that the City had not exceeded an action level for lead provided the basis for the DEQ to maintain that the water in the City continued to be in compliance with the federal SDWA and Act 399.

**12. When did the DEQ first become aware of allegations of elevated blood levels being detected in certain children?**

The DEQ was notified on August 23, 2015, by a professor from Virginia Tech that "over the next few months we will be studying Flint water quality issues..." Results indicating elevated lead levels in homes were reported as part of this study in late August. In September 2015, information was reported in news articles that pediatricians in the City had data suggesting an increase in children's blood lead levels in two zip codes in the Flint area.

Prior to these dates, the City had already completed the required two 6-month rounds of monitoring and the DEQ had made a determination that the City must install corrosion control treatment as documented in correspondence dated August 17, 2015.

**VIII. QUESTIONS RAISED REGARDING THE DEQ'S ACTIONS**

**1. What was the DEQ's response to the USEPA's inquiry in February 2015 regarding the optimized corrosion control treatment being implemented by the City under the LCR?**

The DEQ indicated that the City was complying with the LCR, the lead 90th percentile level was below the action level of 15 ppb, and the City was already conducting the second round of monitoring which would provide for a determination of whether additional treatment needed to be installed. It should be noted that once treatment is designated as optimal, there is no requirement in the LCR that lead results be lower than they were before treatment was installed. The 90th percentile only needs to be lower than the action level in the LCR.

**5. Did the DEQ reject any of the samples submitted by the City?**

Yes, samples at two locations were excluded from the compliance calculation in conformance with rules issued by the USEPA.

According to the LCR, compliance samples must be a first draw, 1-liter sample collected from a cold water, kitchen or bathroom tap after the tap has stood unused for not less than 6 hours. Federal and state rules require community public water systems to identify a pool of targeted high-risk sampling sites, called Tier 1 sampling sites. For a municipality such as the City, the Tier 1 sampling pool must consist of single family structures that are:

- served by a lead service line,
- contain lead pipes, or
- contain copper pipes soldered with lead installed after 1982 but before Michigan enacted the ban on solder containing high concentrations of lead (June, 1988).

As long as a community has Tier 1 sites that contain lead service lines, they are required to collect at least 50 percent of their compliance samples from these lead service line sites. Finally, federal and state rules specify that "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment devices include home softeners, iron filters, etc. Samples collected from multiple family residences, commercial buildings, institutional facilities, or single family structures with point-of-use or point-of-entry treatment can only be used if the community has insufficient Tier 1 sites available.

One of the samples submitted by the City was excluded from the 90th percentile compliance calculation in the latest monitoring period because it was taken from a tap at a non-residential site (non-Tier 1). The other sample result that was excluded was collected from a single family home that has a whole house treatment system. Both of these sites are, therefore, excluded from the compliance consideration based upon federal and state rules.

**6. Did the DEQ review the information submitted by the City to ensure all samples were from Tier 1 sites?**

Yes. The DEQ examined the information submitted and certified by the City that its LCR compliance monitoring sites consisted entirely of Tier 1 criteria sites, which met the requirements of this rule to maximize sampling of high-risk targeted sites.

During the initial implementation of the LCR approximately 25 years ago, water supplies were required to complete a materials evaluation of their distribution system to identify a pool of targeted, high-risk sampling sites. These sites were to be categorized into one of three Tiers (1, 2, or 3) based on risk. The DEQ created an LCR reporting template for water systems to identify each compliance sampling site by Tier, service line material, and building plumbing material.

If a water system has sufficient Tier 1 sites, they are required to sample them before using any lower Tier sites. Furthermore, if they have sufficient sampling sites with lead service lines, they are required to use them to make up at least 50 percent of

further regulatory decision making could have led to actions that were not indicative of a true public health threat. Further complicating this issue was the USEPA's direct implementation of the LCR in Washington, D.C., where it was learned that some "valid" lead results were not always being included in compliance calculations. Subsequently, the USEPA made invalidation of samples for any reason much more difficult. In order to ensure samples were taken at customer taps representative of typical use, the DEQ devised the current recommendations for ensuring appropriate but not excessive stagnation for LCR monitoring.

The DEQ continues to believe it is appropriate to ensure that taps being sampled are representative of typical household use and are sampled during the recommended stagnation period of 6-18 hours. The LCR does not say the result should represent the "absolute worst case" condition – it talks about sampling the highest risk locations (lead plumbing, lead service lines, high lead content solder piping, etc.) after overnight stagnation and then collecting a first draw sample so as not to flush elevated lead from that tap at that point in time. There are a number of other states that share the DEQ's interpretation of the rule and the DEQ encourages the USEPA to provide official clarification directed at all states with primacy.

**9. Does the DEQ require the use of small-neck bottles to obtain samples?**

No. The DEQ does not mandate the use of small-neck bottles; it is the sampling method that is specified in both the federal SDWA and Act 399. Each certified drinking water laboratory provides bottles to their customers upon request for any particular analysis in accordance with the specifications in the SDWA. The bottles provided by the DEQ Drinking Water Laboratory for a lead and copper corrosion control sample meet these requirements.

## Flint Drinking Water Action Plan Update

### FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGE

- DEQ staff met with DHHS staff on October 27 to discuss all lead education material for schools, and action items were created.
- On October 27 DEQ's Lansing District Office received updated dosage, pump specifications, and cut-sheets for phosphate product. A quick glance at the submittal shows most of the requested information has been provided, except for the NSF Standard 60 certification and the maximum dose. Staff will cross-reference the NSF Web site to verify proper certification and maximum dose. If acceptable, DEQ staff will proceed with issuance of the Act 399 permit. Otherwise, the city of Flint's consultant will need to provide the DEQ with the NSF Standard 60 certification and maximum dose information.
- DEQ staff has cross-referenced 46 of the 326 historical lead and copper monitoring sampling sites with the 10,895 service line index card information records available to date.
- DEQ staff met with DHHS staff to review and further develop childcare facility guidance and incorporate drinking water exposure information. Guidance is being provided by DHHS specific to the Genesee County emergency order, and separate guidance for statewide use will also be developed.

#### Additional Actions:

- Preliminary follow-up review of sampling event at Freeman Elementary School: DEQ and DLARA staff met and reviewed outlet/tap materials to correlate with sample results. DEQ staff contacted Jim Henry, Genesee County Health Department, to confirm the location of screening samples. The draft write-up is to be completed by DEQ staff on October 28.
- The weekly meeting between DEQ, DLARA, and DHHS was held. Discussion topics included a review of the results for Freeman Elementary School, along with a discussion of what the results meant and how the data would be presented to the Flint Community Schools Superintendent so that the information could be used to create an action plan for the school. Discussion also included working out the logistics for conducting the plumbing evaluation and subsequent sampling for the other two elementary schools that had results above the action level, during the initial screen of 13 schools. Plans are in process to conduct these two plumbing evaluations on Friday, October 30, with the sampling to take place on Saturday, October 31.

Prepared by: George Krisztian, Flint Action Plan Coordinator  
Laboratory Director  
Department of Environmental Quality  
Telephone: 517-284-6719  
Cell: PPI  
October 28, 2015

**City of Flint Water  
Action Steps for Week of October 26-30**

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
1.	Conduct After Action Plan	DEQ	George Krisztian	Initial meeting held 10/22/15
2.	Introduce legislative changes to Part 54 of NREPA – Drinking Water Revolving Loan Fund	DEQ, Treasury, and EPA	Maggie Pallone George Krisztian Sonya Butler	Draft language submitted to Maggie Pallone for review
3.	After Action Review Panel	DEQ	Madhu Anderson George Krisztian Karen Tommasulo	Panel created and press release issued on 10/21/15
4.	Staff hiring plan	DEQ	Jim Sygo Maggie Pallone George Krisztian	
5.	Finalize fiscal year 2017 budget request	DEQ	Maggie Pallone George Krisztian	
6.	Meeting(s) with school staff/management	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	A summary report for Freeman Elementary School has been drafted
7.	Meet with DHHS and discuss all lead education material for schools	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	Meeting held on 10/27/15; action items created
8.	Review corrosion control treatment plan and get any EPA comments	DEQ and EPA	Jim Sygo Steve Busch Pat Cook Mike Prysby	Meeting held on 10/28/15 to discuss comments

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
9.	Review construction permit application and issue construction permit for phosphate equipment	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	Act 399 permit issued 10/28/15
10.	Review Standby Operation of Flint Water Treatment Plant with city of Flint	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	Comments by DEQ to city of Flint have been provided
11.	Work with Karegnondi Water Authority (KWA) and other agencies to address bottleneck issues; check weekly for status update	DEQ and KWA	Jim Sygo Steve Busch Pat Cook Mike Prysby	Issues regarding soil erosion controls during construction are being addressed
12.	Contact city of Flint for Service Line Record status update and obtain a copy of the records to date	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	Cross-referencing process has begun
13.	Provide DHHS with any available cross-reference information	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	
14.	Develop childcare facility guidance or review DHHS-related materials	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	Meeting held on 10/27/15; DHHS to provide materials
15.	Create a generic school sampling guidance document for statewide distribution; target audience: schools served by municipal water	DEQ and DLARA	Jim Sygo Steve Busch Richard Benzie	



Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
16.	Confirm plumbing assessment and sampling is scheduled for Brownell K-2 STEM Academy and Eisenhower Elementary School	DEQ and DLARA	Jim Sygo Steve Busch Mike Prysby	Sampling materials have been requested from DEQ Laboratory



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI000003  
P.O. Box 30270  
Lansing, MI 48906  
TEL: (517) 335-8184  
FAX: (517) 335-8562

ADDITIONAL  
RESIDUAL  
COLLECTED  
SAMPLES

Sample Number  
LF64282

Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

Business  
Basement Not Tier 1

2 DIFFERENT  
SITES  
SAME  
LOCATION

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	625 S GRAND TRAVERSE, FLINT	Source:	TYPE III
Collected By:	MIKE GLASGOW	Site Code:	
Township/Well#/Section:	//	Collector:	Public Water Supply Operator
County:	Genesee	Date Collected:	05/15/2015 13:00
Sample Point:	BATHROOM	Date Received:	05/20/2015 11:24
Water System:	Treated Public Distribution System	Purpose:	Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.017	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U. S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krazian

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## DRINKING WATER LABORATORY

USEPA Region V Drinking Water Cert. No. MI00003

P.O. Box 30270

Lansing, MI 48909

TEL: (517) 335-6184

FAX: (517) 335-8582

Sample Number

LF64284



### Official Laboratory Report

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48505

System Name/Owner: CITY OF FLINT  
Collection Address: 625 S GRAND TRAVERSE, FLINT  
Collected By: MIKE SARGENT  
Township/Well#/Section: //  
County: Genesee  
Sample Point: UTILITY SINK  
Water System: Treated Public Distribution System

WSSN/Pool ID: 2310  
Source: TYPE III  
Site Code:  
Collector: Private Citizen  
Date Collected: 05/18/2015 08:30  
Date Received: 05/20/2015 11:24  
Purpose: Other

*Not Tier 1 Business*  
*2 Different SITES ONE LOCATION*

*Not For Compliance*

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.14	05/21/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.020	05/21/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
639 South Saginaw  
Flint, MI 48502-1540  
810 257-3603

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts:  
Drinking Water Unit Mgr: Julie Pieper  
Systems Mgmt. Unit Mgr: George Kristian

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**



USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8582

**Sample Number**  
**LF57732**

**Official Laboratory Report**

Report To: **MIKE GLASGOW**  
**4500 N DORT HWY**  
**FLINT MI 48505**

System Name/Owner: **CITY OF FLINT**  
Collection Address: **1383 WASHINGTON AVE, FLINT**  
Collected By: **ANTHONY PALLADENO**  
Township/Well#/Section: **//**  
County: **Genesee**  
Sample Point: **KITCHEN**  
Water System: **Treated Public Distribution System**

WSSN/Pool ID: **2310**  
Source: **Single Family Dwelling**  
Site Code:  
Collector: **Private Citizen**  
Date Collected: **03/09/2015 08:00**  
Date Received: **03/24/2015 11:05**  
Purpose: **Routine Monitoring**

*Past History  
Habit Training  
Low Pesticide Use*

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	0.16	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.007	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

**Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:**

**Genesee County Health Dept.**  
**630 South Saginaw**  
**Flint, MI 48502-1540**  
**810 257-3603**

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts:  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Kristian



## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

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Owner/Location Information:

CITY OF FLINT  
212 BROWNING AVE  
FLINT MI 48507

Sample Number: LLF54945

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 2/18/2015 7:15:00 AM

Arrival Date: 2/19/2015 11:13:00 AM

Site Code:

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: KITCHEN

Collector: Private Citizen

Collected By: LEANNE WALTERS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	ND	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.104	0.001	mg/L	EPA 200.8

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Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Tue Aug 4 14:16:40 EDT  
2015

*was whole house filter.*

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
DRINKING WATER LABORATORY**

USEPA Region V Drinking Water Cert. No. MI00003  
P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-8184  
FAX: (517) 335-8562



**Sample Number**  
**LF57729**

**Official Laboratory Report**

Report To: MIKE GLASGOW  
4500 N DORT HWY  
FLINT MI 48605

System Name/Owner:	CITY OF FLINT	WSSN/Pool ID:	2310
Collection Address:	212 BROWNING AVE, FLINT	Source:	Single Family Dwelling
Collected By:	MIKE GLASGOW	Site Code:	
Township/Well#/Section:	//	Collector:	Public Water Supply Operator
County:	Genesee	Date Collected:	03/18/2015 11:10
Sample Point:	KITCHEN	Date Received:	03/24/2015 11:05
Water System:	Treated Public Distribution System	Purpose:	Other

TESTING INFORMATION			REGULATORY INFORMATION			
Analyte Name	Result (mg/L)	Date Tested	RL (mg/L)	MCL/AL (mg/L)	Method	CAS #
Copper	Not detected	03/25/2015	0.05	1.3	EPA 200.8	7440-50-8
Lead	0.004	03/25/2015	0.001	0.015	EPA 200.8	7439-92-1

The analyses performed by the MDEQ Drinking Water Laboratory were conducted using methods approved by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act, 40 CFR parts 141-143, and other regulatory agencies as appropriate.

Your local health department has detailed information about the quality of drinking water in your area. If you have concerns about the health risks related to the test results of your sample, please contact the Environmental Health Section through the address and telephone number listed below:

Genesee County Health Dept.  
630 South Saginaw  
Flint, MI 48602-1540  
810 257-3603

*Not 1st draw  
whole house filter*

CAS# : Chemical Abstract Service Registry Number  
MCL : Maximum Contaminant Level  
AL : Action Level  
RL : Reporting Limit

mg/L : milligrams / Liter (ppm)  
ppm : parts per million  
MPN : Most Probable Number  
CFU : Colony Forming Unit

Laboratory Contacts  
Drinking Water Unit Mgr: Julia Pieper  
Systems Mgmt. Unit Mgr: George Krsztian



## Michigan Department of Environmental Quality

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**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

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Owner/Location Information:CITY OF FLINT  
212 BROWNING AVE  
FLINT MI 48507Sample Number: LLF59748

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Sample/Collection Information:WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 4/2/2015 8:00:00 AM  
Arrival Date: 4/14/2015 11:07:48 AMSite Code:  
Water Source: Single Family Dwelling  
Sample Reason: Other  
Sample Point: Treated Public Distribution System  
Point Description: PRE P O S  
Collector: Private Citizen  
Collected By: LEEANNE WALTERS

---

<u>CasNo</u>	<u>Analyte</u>	<u>Result</u>	<u>Detect</u>	<u>Units</u>	<u>Method</u>
7440-50-8	COPPER (RECOVERABLE)	0.11	0.05	mg/L	EPA 200.8
7439-92-1	LEAD (TOTAL)	0.707	0.001	mg/L	EPA 200.8

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

*Basement  
Tap per filter*Print Date: Thu Aug 27 09:27:00 EDT  
2015*Not A PRESCRIBED TAP*

## Service Line Data

- 56,254 Parcel Records in the database in the city of Flint.
  - 29,211 were done previously to the DNR taking on this project 52%
  - 27,043 parcels tasked to the DNR to get information for 48%
  - As of 12 P.M. on Thursday January 28th, 2016, DNR had completed 25,370 records, or about 93% of the records they were tasked with.
- 
- 5,243 parcels showing lead service lines
  - 24,184 parcels showing other types of service lines
  - 25,131 parcels having an unknown type of service line



**Michigan Department of Environmental Quality  
Drinking Water Program Budget Request  
December 21, 2015**

<b>Appropriation</b>	<b>FTEs</b>	<b>Amount</b>
<b>One-Time (2016 Supplemental)</b>		
City of Flint Emergency Water Services		\$ 3,900,000
Support half of the cost for Flint to stay on the Great Lakes Water Authority water system for six additional months (July 1, 2016 - December 31, 2016) until the Karegnondi Water Authority pipeline is completed		
<b>Total One-Time Funding</b>		<b>\$ 3,900,000</b>
<b>Ongoing</b>		
<b>Drinking Water and Environmental Health Staff</b>		
Corrosion Control Specialists	3	\$ 450,000
Sampling Staff	2	\$ 300,000
Lab Staff	3	\$ 450,000
Other	2	\$ 300,000
<b>Total Staff</b>	<b>10</b>	<b>\$ 1,500,000</b>
Local Health Department Contracts <sup>and</sup> <del>for</del> Testing fees		\$ 1,000,000
Lab Equipment		\$ 300,000
Travel		\$ 100,000
Other Supplies and Services		\$ 100,000
<b>Total Ongoing Funding</b>		<b>\$ 3,000,000</b>
<b>Total Funding Request</b>		<b>\$ 6,900,000</b>

**Supplemental Boilerplate**

Sec. xxxx. From the funds appropriated for the City of Flint Emergency Water Services, the department is authorized to pay \$3,900,000 of the water connection service costs to the Detroit Water and Sewerage Department or its successor. The payments shall only be made once a legally executable agreement has been reached between the parties. The funds are intended to support half of the connection costs for July 1, 2016 through December 31, 2016.

10/16/15

TO:

Jim Sygo

George Krisztian

Maggie Pallone

3-1 MI Legislative File

2-1 Dept. of Attorney General File

Director received this from the AG's Office.

This is for your information.

Thank you.

Mary Beth



AG \_\_\_\_\_  
Chief Deputy \_\_\_\_\_  
M. Schneider \_\_\_\_\_  
Date Original to Opinions Division 9-30-15

Communications \_\_\_\_\_  
A. Cropsey \_\_\_\_\_

34TH DISTRICT  
STATE CAPITOL  
P.O. BOX 30014  
LANSING, MI 48909-7514  
PHONE: (517) 373-8808  
FAX: (517) 373-5997  
E-MAIL: sheldonneeley@house.mi.gov

MICHIGAN HOUSE OF REPRESENTATIVES

**SHELDON A. NEELEY**  
ASSISTANT DEMOCRATIC WHIP  
STATE REPRESENTATIVE

COMMITTEES:  
HEALTH POLICY  
LOCAL GOVERNMENT  
TRANSPORTATION AND  
INFRASTRUCTURE

September 29, 2015

DEPT. OF THE  
ATTORNEY GENERAL

SEP 30 2015

Assigned to \_\_\_\_\_

Attention: Honorable Bill Schuette, Attorney General  
State of Michigan

As I took my place in this honorable legislative body for the first time, I carried with me the many needs and concerns of a stressed community. These concerns were richly woven in to the very fabric of my experiences on Flint City Council where I worked to lighten the burdens of a working class community.

Once again, I make the appeals I made in my initial fight for the community. As a councilman, working for a city under the control of a state authorized Emergency Financial Manager, I indicated the need for a forensic audit to address inconsistencies with the use of our financial resources. This request was eventually denied by the Emergency Financial Manager. It became painfully clear that the City's elected officials would have no relevant voice in meaningful decision making.

The Emergency Financial Manager would make a unilateral decision to shift the stable and sufficient water system source from Detroit Water and Sewer Department and replace it with the untested Flint River as a primary water source. This was a decision that I strongly objected to.

Since transitioning to the Flint River, the citizens of Flint have suffered serious health issues as a result of poor water quality. We have seen elevated TTHM, e-coli bacteria and at present lead and copper changes. The most recent problems are indicative of a lack of proper corrosion treatment. To some it seems that Flint has a water supply of a "third world country" while living near one of the greatest water sources in the world "The Great Lakes".

Most recently, this matter of water quality, affordability and culpability was heard in the Seventh Circuit Court by Judge Archie Hayman where he effectively ruled in favor of the plaintiffs. And, equally important is the recent independent findings by Virginia Tech and the Medical Doctors Group who cited serious problems with the quality of water in the City of Flint.



34TH DISTRICT  
STATE CAPITOL  
P.O. BOX 30014  
LANSING, MI 48909-7514  
PHONE: (517) 373-8808  
FAX: (517) 373-5997  
E-MAIL: sheldonneeley@house.mi.gov

MICHIGAN HOUSE OF REPRESENTATIVES

**SHELDON A. NEELEY**  
ASSISTANT DEMOCRATIC WHIP  
STATE REPRESENTATIVE

COMMITTEES:  
HEALTH POLICY  
LOCAL GOVERNMENT  
TRANSPORTATION AND  
INFRASTRUCTURE

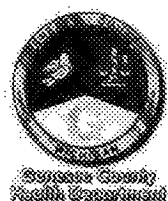
After calling for many inquiries and meetings with the Michigan Department of Environmental Quality, I find that we are no further along to a resolution of this problem than when we began. The responses by local and state departments responsible for the health and safety of a community have been unacceptable. My efforts to obtain appropriate information have been met with elusive replies.

**I make this request to urge the Attorney General's Office to investigate and determine if the City of Flint and/or the State of Michigan and its agents have culpability and responsibility for this unfortunate problem.** We have reached out to the Governor's Office for additional support and intervention. To date, we have had few sufficient responses.

Once again, I implore you to explore the many facets of this situation and the possible corruption surrounding the water problems plaguing the City of Flint to determine if there have been improprieties and maleficence committed against this historical community.

Respectfully,

Sheldon A. Neeley



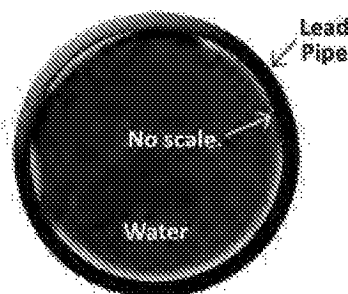
# Adding Phosphate to Flint Water



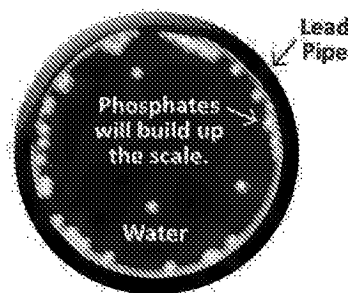
## Why is there lead in some homes' water?

- Lead pipes, solder, and faucets used to be common. We now know that lead can harm our health.
- Homes built before 1987 are more likely to have lead service lines and pipes. Some faucets and certain kinds of solder could also have lead in them, even those installed recently.
- The lead found in tap water in homes around Michigan is likely from these older pipes, solder, and faucets.
- Replacing old pipes, service lines, and faucets is the only sure way to limit the lead in your tap water.
- New pipes and solder should meet EPA lead-free standards.

## Why are we putting phosphate in the water?



- Over the years, minerals in our water have built up inside our water pipes.



- This mineral build-up is called scale.
- This scale helps to keep a lot of lead from the pipes out of our water.
- If something happens to the scale and the water can touch the pipes, lead can get into the water.
- Adding phosphate to the water helps build and maintain scale by collecting on the sides of the pipes and sticking to the metal.

## What is Phosphoric Acid?

Although there is already some phosphate in the water we get from Detroit, Flint plans to add more to help build up and maintain the scale faster. To get the phosphate needed for this to work, the City of Flint Water Plant will be adding something called *phosphoric acid* to the city's water. Phosphoric acid is a common food ingredient in things like cola or juice.

The phosphoric acid will quickly dissolve in the water and break down into two parts - hydrogen and phosphate. Hydrogen will become a part of the water and the leftover phosphate will settle out and stick to the walls of the pipes - building up scale like in the picture above.

## Learn About Phosphate

- Phosphorus is a natural mineral that your body needs. It works with calcium to keep your bones strong and healthy.
- Phosphate is a type of salt that has phosphorus in it.
- Although there already is phosphate in the Detroit drinking water, extra phosphate is being added to the water in the City of Flint to help put more scale in the pipes.
- The City of Flint, MDEQ, and the EPA worked together to find how much more phosphate is needed in the water going to Flint homes.
- Most people likely already eat and drink more phosphate in everyday food than the very small amount that will be found in the tap water.
- Continue to use water filters that remove lead until the Genesee County Health Department's Public Health Emergency Declaration is removed.

If you have questions about the phosphate being added to City of Flint water, please call the City of Flint Water Plant at 810-787-6537.

If you have questions about phosphate and your health, please call MDHHS at 1-800-648-6942.



## **Assisting Schools and Child Care Facilities in Addressing Lead in Drinking Water**



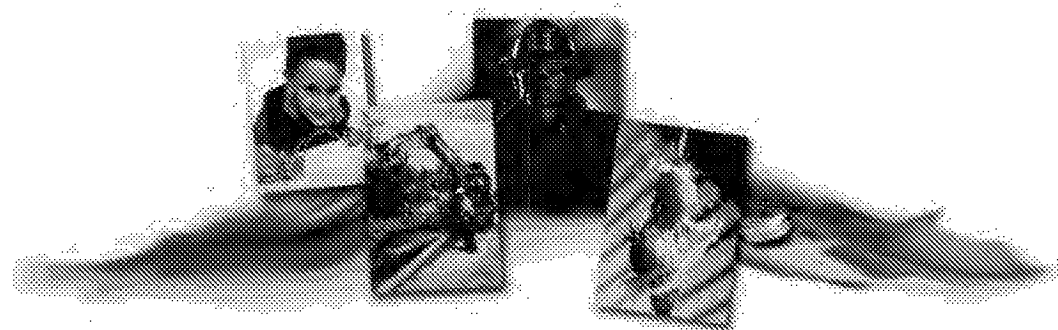
**American Water Works  
Association**

The Authoritative Resource on Safe Water<sup>SM</sup>

*Advocacy  
Communications  
Conferences  
Education and Training  
Science and Technology  
Sections*

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# **Assisting Schools and Child Care Facilities in Addressing Lead in Drinking Water**

## **EXECUTIVE SUMMARY**

The American Water Works Association (AWWA) is committed to providing information that helps water suppliers in their role as guardians of public health. Exposure to lead at schools and child care facilities is an issue of growing concern to EPA and some states.

Lead is a significant public health issue. Over the past several decades significant steps were taken to reduce lead from a variety of sources: fuel, paint, air pollution, and plumbing components. Drinking water utilities are also doing their part to reduce lead exposure. Community water systems actively manage and monitor the drinking water they provide to control corrosivity, and thereby reduce the potential to leach lead from household plumbing. Some water systems take additional measures like purchasing low-lead / no-lead distribution system components and others have proactive lead service line replacement programs. Steps also have been taken to identify and reduce lead exposure in schools, but recent events suggest that additional attention may be appropriate in some school and child care facilities.

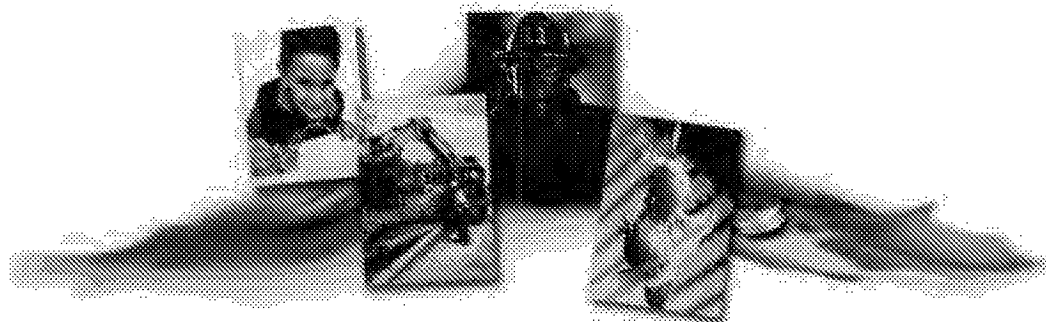
School and child care administrators are responsible for limiting lead exposure in their facilities, but some water suppliers may be in a position to provide valuable assistance by working

with local health departments, schools and child care facilities. We hope you find the information provided in this document helpful as you consider your utility's ability to inform or assist school and child care facilities in the communities you serve.

The following compares and contrasts EPA's guidance to schools and child care facilities under the Lead Contamination Control Act (LCCA) and the Lead and Copper Rule (LCR). It also provides a brief overview of what is entailed in monitoring for lead in schools and child care facilities and the process for undertaking remediation. This report describes a range of assistance utilities can provide to schools and child care facilities based on local needs and resources. Most importantly, it identifies key points of coordination, and provides basic information that the utility can use in communicating about lead in drinking water.

While this report was prepared with a focus on U.S. regulations, the report premise and suggestions are generally applicable. We hope that this document will be useful to our water supplier members in Canada, Mexico, and other countries.





# Assisting Schools and Child Care Facilities in Addressing Lead in Drinking Water

## INTRODUCTION

Lead is a significant public health issue, and it is not only a drinking water issue. Other potentially more significant sources of lead include paint and dust. In addition, schools face numerous other environmental challenges. Consequently, EPA and the Department of Education encourage schools to think of building design, maintenance, and remediation holistically (<http://efpub.epa.gov/schools/>). While schools and child care administrators bear the responsibility for minimizing lead exposure in their facilities, some water suppliers may be in a position to provide valuable assistance by collaborating with local health departments, schools and child care facilities to help facility administrators better understand how to monitor for and manage lead in drinking water at their facilities.

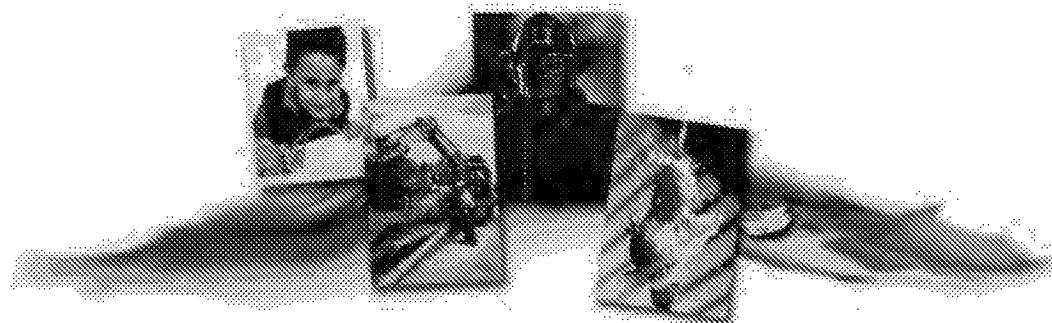
### Overview

The issue of lead in drinking water has returned to the national spotlight after a decade of relative calm. Most water utilities have been very successful in implementing effective corrosion control programs and complying with the requirements of the Lead and Copper Rule (LCR). In spite of this, utilities are facing renewed

regulatory, legislative and public scrutiny, attributable largely to the discovery of elevated levels of lead in tap water in a few high-profile communities. Lead exposure in schools is only one aspect of this scrutiny, but it has received considerable attention.

The reduction of lead exposure in schools and child care facilities is the responsibility of the administrators of those facilities. This responsibility includes, but is not limited to, minimizing lead levels in the drinking water system within the facility. Water utilities are not legally responsible for the lead levels in the water systems of schools and child care facilities unless the facility maintains its own supply and is classified by the state as a public water system.

A lead-in-drinking-water problem may be identified by a community's health department, school system, an individual school or child care facility, or the general public. By being prepared for this issue, the utility can better respond to inquiries and, where appropriate, develop more effective collaborations with schools and child care facility managers.



## **REGULATORY REQUIREMENTS**

### **A Comparison of the Lead Contamination Control Act Guidance Manual and Lead and Copper Rule Requirements**

#### **Regulatory Background**

The Safe Drinking Water Act (SDWA) is the legislation that addresses lead in public drinking water. The LCCA and the LCR work together to minimize lead in drinking water. The goal of the LCR is to minimize lead and copper in drinking water, primarily by reducing water corrosivity. The LCR sets specific requirements for public drinking water systems. This is in sharp contrast to the LCCA, which addresses lead exposure at individual outlets in schools. The LCCA resulted in federal guidance applicable to schools and child care facilities, but it did not set regulatory requirements.

#### **EPA Guidance Under SDWA and LCCA**

Failing to meet requirements specified in state and federal regulations results in violations, and their associated fines and penalties. In addition to setting regulatory requirements EPA provides technical information and advice through guidance. EPA guidance is not compulsory, but it is provided with the intent of assisting the recipients to achieve national public health objectives and where there are related regulatory requirements, achieve compliance with those requirements.

EPA is now in the process of updating its guidance documents for public drinking water systems (i.e., LCR guidance), and for schools and child care facilities (i.e., LCCA guidance).

Some states have adopted rules and requirements beyond these national statutes and rules. Consequently, the primacy agency for state rules and, in most instances the local health departments, are the critical points of contact on the issue of lead in schools.

#### **The Lead Contamination Control Act**

The LCCA was signed into law in November 1988. This law was intended to reduce exposure to lead from all sources, including lead in school drinking water supplies. The LCCA required:

1. A recall of drinking water coolers with lead-lined tanks;
2. Prohibition of the sale and manufacturing of any drinking water cooler that was not "lead-free"<sup>2</sup>;
3. Development of guidance to educational agencies and schools including child care facilities on sampling and testing protocols; and

<sup>2</sup> LCCA defined "lead-free" to mean "not more than 8 percent lead; except that no drinking water cooler which contains any solder, flux, or storage tank interior surface which may come in contact with drinking water shall be considered lead free, if the solder flux, or storage tank interior surface contains more than 0.2 percent lead."

for follow-up actions, while several have opted for 0.015 mg/L (15 ppb) (the LCR Action Level). Consequently, it is important to understand how individual states administer their programs and to maintain an open dialogue with state regulators regarding program implementation.

### *Public Education*

When schools and child care facilities conduct monitoring for lead in drinking water, EPA recommends that they:

1. Make available a copy of the sampling results for "inspection by the public, including teachers, other personnel, and parents."
2. Notify relevant parent, teacher, and employee organizations that sampling program results are available.

Table 1 on page 7 briefly summarizes the provisions of the LCCA guidance; Appendix A provides a more detailed summary.

### *Remediation*

Addressing lead in drinking water may require both short- and long-term solutions. Decisions for one remedy over another will be based on such factors as likelihood of success, availability of water, cost, and staffing requirements.

Some examples of remedies are listed in Appendix I. More detailed explanations, including

information about advantages and disadvantages, are in EPA's LCCA guidance.

## **The Lead and Copper Rule**

The LCR, finalized in June 1991 and later amended in January 2000, applies to public water systems. Under the LCR, no more than 10 percent of samples from a public water system may exceed the rule's Action Levels, 0.015 mg/L (15 ppb) for lead and 1.3 mg/L for copper.

When the Action Level is exceeded, specific follow-up steps include corrective action to implement optimized corrosion control and public notification. The LCR provisions apply to water suppliers that serve schools and child care facilities. If an individual school or child care facility supplies or treats its own water supply, it is considered a public water system and must comply with the rule provisions. Additional information about the LCR is available on the EPA Office of Ground Water and Drinking Water's website at: <http://www.epa.gov/safewater/lead/index.html>

At present the LCR is applicable to community water systems and non-transient non-community water systems. Some schools and child care facilities that have their own water supply are, therefore permitted public water systems. In these instances, the facility is also subject to the applicable provisions of the LCR.

The LCCA guidance targets material remediation

### **Types of Public Water Systems**

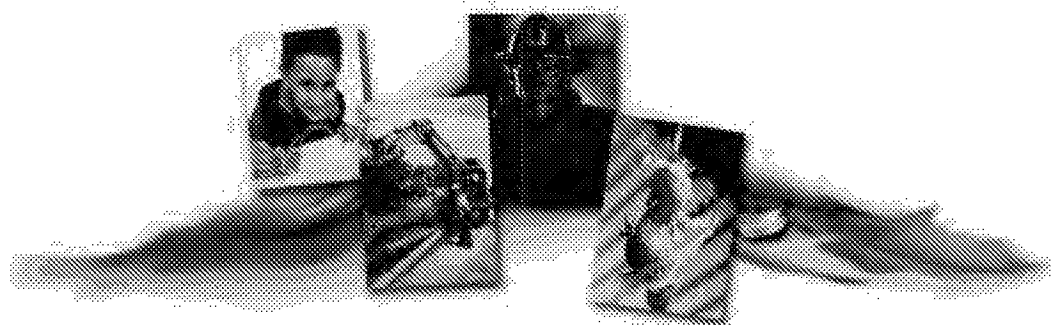
**Community Water System (CWS):** A public water system (PWS) that supplies water to at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

**Non-Transient Non-Community Water System (NTNCWS):** A PWS that regularly supplies water to at least 25 of the same people at least six months per year, but not year-round. Some examples are schools, factories, office buildings, and hospitals that have their own water systems.

**Transient Non-Community Water System (TNCWS):** A PWS that does not regularly serve at least 25 of the same persons over six months per year. Examples are places such as a gas station or campground where people do not remain for long periods of time

**Table 1. Summary of  
Distinguishing Features of the Lead Contamination Control Act Guidance and the Lead  
and Copper Rule Requirements**

<b>Feature</b>	<b>Lead Contamination Control Act Guidance</b>	<b>Lead and Copper Rule Requirements</b>
Sampling Sites	Each cold water tap in a facility	Cold water taps in high risk homes/buildings
"First Draw" Sample Size	250 mL	1000 mL
Stagnation Period	Morning, first-draw water sample" (e.g., sampling after an 8 to 18-hour stagnation)	"First-draw" sample (e.g., sampling after a 6- to 8-hour stagnation period)
Action Level	0.020 mg/L at each cold water tap	0.015 mg/L in 90% of taps
Action(s), if Lead Limit Exceeded	Additional samples recommended; suggests remedial measures	Mandatory corrective actions such as public education, lead service line replacement, increased monitoring and corrosion control treatment
Sampling Schedule	None specified	Initially, two 6-month monitoring periods; Reduced monitoring – June through September each year or once per three years
Certified Laboratory Requirement	Yes	Yes
Public Notification Requirements	Make results available in the administrative offices of the local educational agency; must notify parents, teachers, and employee organizations of the availability of results	Must present data in annual Consumer Confidence Report. Full notification required only if Action Level is exceeded.



## LEAD IN SCHOOLS AND THE WATER SUPPLIER

Under the LCCA guidance, school and child care administrators are responsible for taking steps to minimize exposure to lead in drinking water at their facilities. These facilities can obtain technical assistance from local health departments, but as the local water supplier, you may be in a position to provide information that facilitates appropriate action in the communities you serve.

### Getting Prepared

To communicate effectively with health departments, school, and child care administrators about lead in drinking water, you may choose to first provide a clear presentation of your utility's actions related to this issue. If you effectively demonstrate the steps taken to reduce lead at the tap in the community water supply, you affirm your utility's commitment to public health. You also provide the technical information necessary for future discussions on lead in school drinking water.

Compiling and reviewing the following information is a worthwhile investment of time:

#### 1. Review your utility's LCR compliance status.

- Do you have a description of your program to maintain optimized corrosion control (OCC)?
- What are your monitoring requirements and what is your

compliance record with the LCR Action Level?

- When is compliance monitoring occurring?
- Do you have a summary of pertinent data in an easily-understood format that can be provided to the school or child care facility staff?

#### 2. Review or develop your utility's service line and meter data for discussions with school and child care administrators.

- Are there lead service lines or compound meters with lead components leading to school or child care facilities?

Determine how the LCCA is administered in your state and locally. In most communities, the local health department is the key agency in identifying and prioritizing risks to public health. It is also the oversight agency most likely to provide direction to schools on lead issues. Opening a discussion with the local health department provides an opportunity to exchange information and identify shared priorities. Key questions include:

1. What is the status of state regulations arising from the LCCA?
2. What actions have been taken to-date?
  - What notifications, requests, or guidance has been distributed to

the school or school system. Correspondence is typically most effective if combined with follow-up contact.

Identifying all of the child care facilities in a community can be quite challenging. Appendix C provides several resources that are available to find these facilities.

#### **Identifying Child Care Facilities**

State licensing and registration programs for child care providers are the most centralized sources of information on child care facilities.

#### **Examples of Possible Utility Assistance**

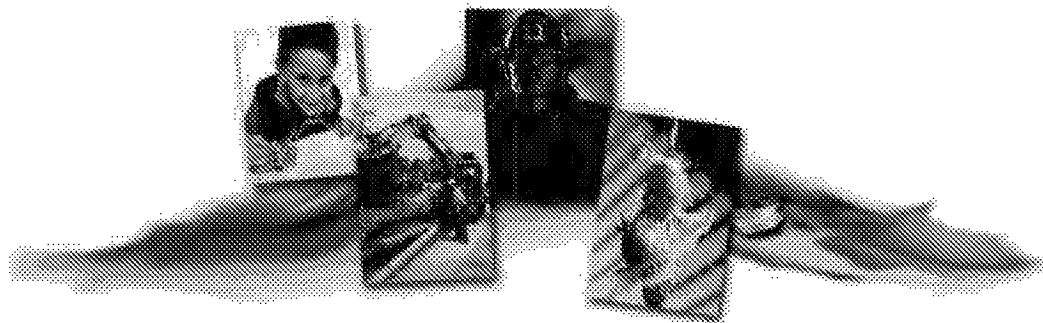
Utilities have a wide range of expertise and resources available to assist schools and child care facilities in their responsibility to minimize exposure to lead in drinking water. While your utility must decide what level of assistance is appropriate, you may consider a range of opportunities for collaboration. Table 2 on page

12 illustrates a range of possible interactions with schools, child care facilities, and local health departments, but it is by no means all encompassing. Innovative utilities, schools, and local health departments will undoubtedly identify additional ways to work together.

#### **Health Department**

Health departments are responsible for balancing risk and costs of reducing risks in their community and may determine that current actions are appropriate. A utility's first contact should be through the Health Department before contacting schools and any future actions should be guided by the Health Department.

Due to the complexity of lead in drinking water issues and the number of facilities that may be involved, utilities may incur significant costs in assisting schools and child care facilities. Before offering assistance, utilities should ensure that their governing boards concur with such commitments.



## MANAGING LEAD LEVELS AT THE TAP IN SCHOOLS AND CHILD CARE FACILITIES

School and child care facility administrators face a large portfolio of environmental and public health concerns. Consequently, some schools employ comprehensive programs to assure compliance with environmental and public health standards. Lead paint, dust abatement, and other lead exposure reduction measures may already be ongoing through a lead poisoning prevention program. Where possible, lead in drinking water should be managed in the context of a multimedia program. Whether such a program exists or not, steps can be taken to assess lead levels in water at drinking water fountains, bubblers, and other outlets.

School systems and child care facilities that already have taken steps to control lead in their facilities and maintain a regular monitoring program are much better positioned to manage lead in drinking water than those confronting the issue for the first time. Addressing lead in drinking water, when elevated levels are identified within a facility, typically involves an initial investment in physical changes to a facility, the introduction of new maintenance practices, and the establishment of an ongoing monitoring program for lead levels.

A facility with an ongoing lead poisoning prevention program that addresses tap water may need little interaction with its water supplier beyond routine communications. However, a facility in which management of lead exposure has not consistently focused on water may need to initiate an Action Plan and consequently may

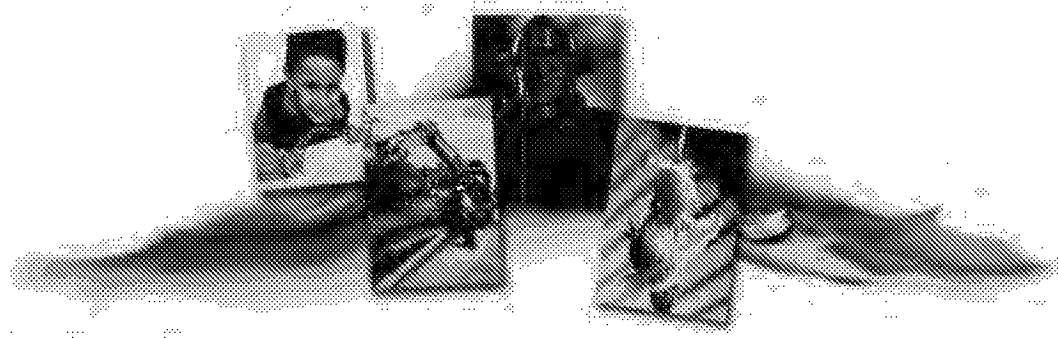
have a greater interest in interacting with the drinking water utility.

Action Plans are typically initiated in a phased manner, during which the school or child care facility:

1. Reviews previous efforts to remove leaded materials, implement lead control strategies, etc.
2. Conducts targeted monitoring (if recent monitoring data are not available) to determine if lead levels appear to be elevated.
3. Develops a detailed Action Plan based upon available information.

An Action Plan to address lead in drinking water must address both technical and communication concerns. Appendix D is an overview of the basic components of such a plan. This overview is supplemented with materials in the appendices (E – K) that water suppliers may provide to school and child care facility managers to inform and assist them in developing their Action Plans.

The components of the Action Plan should be structured to yield an assessment of the situation, a determination of the need for remedial action, development of a remediation strategy, execution of the remediation strategy, and finally, assessment of remediation strategy's effectiveness. More specifically, the plan should incorporate the following elements:



## SUMMARY

Consumers and the media do not always understand how lead enters drinking water, and they are often confused about the water supplier's role in reducing exposure at the tap. However, since lead in drinking water is a water quality issue, the water supplier will often be sought out as the most knowledgeable voice in the ongoing public discussion. Utilities are providing their

communities an important service when they proactively communicate potential risks, help the community understand relevant issues, and provide available assistance to school and child care administrators. In providing this service utilities help to ensure that well-reasoned measures are taken to protect public health.



## Summary of Key Elements of the Lead Contamination Control Act

Organization	Responsibility
States and Local Governments	<p>Provide for the dissemination of EPA's guidance document and testing protocol and the list of water coolers that are not lead-free</p> <p>Establish a program to assist local educational agencies in testing for and remedying lead contamination in drinking water from coolers and other sources of lead contamination at schools</p> <p>Make available lead testing results in the administrative offices of the local educational agency for inspection by the public, including teachers, other school personnel and parents</p> <p>Notify parents, teachers and employee organizations of the availability of lead testing results</p> <p>Repair, replace, permanently remove, or render inoperable water coolers that are not lead-free and that are located in schools, unless the coolers are tested and found to not contribute lead to drinking water</p>
Environmental Protection Agency (EPA)	<p>Publish a list of each brand and model of water cooler that is not lead-free, including a list of the brand and model of water coolers with a lead-lined tank and distribute the list to States</p> <p>Publish a guidance document and testing protocol to assist schools in determining the source and degree of lead contamination in school drinking water supplies and in remedying the contamination.</p>
EPA and State Primacy Agencies	<p>Publish and make available to the public, upon request, a list of laboratories certified by EPA or the State, to conduct analyses of lead in drinking water</p>
Consumer Product Safety Commission	<p>Issue an order requiring manufacturers and importers of water coolers with lead-lined tanks to repair, replace, or recall and provide a refund for such coolers</p>
Water cooler manufacturers, importers, others	<p>Do not sell any drinking water cooler, listed by EPA or any cooler that is not lead free*, including a lead-lined cooler.</p>

\* A lead free water cooler is defined as "a drinking water cooler, that each part or component of the cooler which may come in contact with drinking water contains not more than 8 percent lead, except that no drinking water cooler which contains any solder, flux, or storage tank interior surface may contain more than 0.2 percent lead."

HC8WT	HC14F	HC6W	HWC7D	HC8WTH
HC14FH	HC8W	HC2F	HC14WT	HC14FL
HC14W	HC2FH	HC14WTH	HC8FL	HC4F
HC5F	HC14WL	HCBF7D	HC4FH	HC10F
HC16WT	HCBF7HO	HC8FH	HC4W	HC8FH
HC4W	HWC7			

*Halsey-Taylor Water Coolers with Lead-Lined Tanks*

The following six models have one or more units in the model series with lead-lined tanks:

WM8A      WT8A      GC10ACR      GC10A      CG5A      RWM13A

The following models and serial numbers contain lead-lined tanks:

WM14A Serial No. 843034	WM14A Serial No. 843006
WT11a Serial No. 222650	WT21A Serial No. 64309550
WT21A Serial No. 64309542	LL14A Serial No. 64346908

## **APPENDIX C. IDENTIFICATION OF SCHOOLS AND CHILD CARE FACILITIES**

Listed below are resources that can assist utilities in identifying the schools and child care facilities within their service area.

- The Local Board of Education
- The state licensing office – a particularly useful resource in identifying child care facilities
- Child care information services as provided by the local government
- Child welfare advocacy groups
- The local health department
- Fire and police departments
- The water utility's billing system database
- The water utility's cross-connection control database
- The local telephone book/yellow pages (and equivalent web-based phone books)

## **Data Management**

For an assessment of monitoring results to be meaningful, a sound data management system must be established in the Action Plan and followed diligently during monitoring and reporting. Data management should be appropriate to the scale of the monitoring effort (i.e., managing data for a single structure need not be as elaborate as a data system for an entire school system). If lead contamination is found, sample records and test results will assist in pinpointing the sources of the problem and indicate possible remediation measures.

## **Assessing the Results**

The analytical results should be evaluated with an established benchmark level<sup>3</sup> or point of reference. The LCCA guidance suggests 0.020 mg/L, but some states have chosen other levels. Sampling points with lead levels that exceed the benchmark should be considered candidate sites for either re-sampling (in order to confirm the results), removal from service, or remediation.

### ***Action in Response to Findings - Develop a Solution***

The analytical results may reveal situations that require further investigation. For example, if a child care facility exhibits elevated levels of lead, a thorough investigation of plumbing materials in that facility may be warranted. Preparation for investigative efforts should be planned in advance of the initial sampling program, so that a thorough investigation can be completed in a timely manner. Preparations should include but need not be limited to:

1. Identifying how investigation efforts will be prioritized and resources allocated.
2. Preparing staff or contractors to evaluate coolers, fixtures and other factors that might contribute to lead levels at a sampling location.

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<sup>3</sup> Like the LCR the LCCA guidance refers to this benchmark level as an "action level."

3. Identifying staff and setting protocols for running water through the outlet and re-sampling.
4. Preparing communication materials to convey results and education materials to parents, students, and staff.
5. Determining what alternative sources of drinking water to provide until remediation is complete.

Lead in drinking water can be a complex problem, and there is no single approach that is suitable for addressing all situations, rather solutions are very site-specific. Decisions will need to be based on the age and condition of a facility's plumbing, the nature of the water supply, testing results and sources of lead contamination. A common immediate action is to immediately remove from service any tap / outlet where elevated lead levels are observed until appropriate remediation measures are identified and instituted. When a tap / outlet is taken out of service, appropriate signage should be displayed until it is remediated.

When lead risks are identified, facility managers must find short- and long-term solutions. Short-term control measures may include:

- Cleaning debris from faucet screens,
- Measures to reduce galvanic corrosion (e.g., dielectric unions, paint or polymer coatings, etc.)
- Maintenance programs to assure adequate turnover of water in the facility's pipes,
- Removing outlets from use, and
- Providing bottled water.

More permanent fixes may include:

- Replacing taps, bubblers, coolers, faucets, or other outlets,
- Correcting improper grounding of electric wiring,
- Installing point-of-use devices,
- Installing corrosion control devices, and

implementing the LCCA and associated guidance. The local or state health agency possesses expertise and credibility in the area of risk management. Water suppliers deliver non-corrosive water to control lead leaching and have a detailed understanding of delivered water quality. Regardless of the level of participation by the water supplier, a communications strategy on lead in school drinking water should incorporate:

- Defined goals or objectives for the communications efforts.
- Identification of primary and secondary target audiences, including school management, staff, parents and wider school community; local policy makers; advocacy organizations, and media.
- Risk communication to concerned stakeholders.
- Clearly defined messages to be repeated in communications.
- Identification of available communications tools, including, but not limited to, web sites, school newsletters, letters to parents, public meetings, press releases and news conferences.
- Identification of potential language barriers.
- A timeline for key public communications moments, including just before a sampling program begins, after results of testing are obtained, and when solutions are made public.
- Information to media that defines relevant issues and communicates the control strategy.

## **Engaging Partners in the Action Plan**

Water suppliers are one in a wide range of partners who may be available to assist school and child care administrators in their lead control strategies. Local health departments and state primacy agencies are key partners both for the

water supplier and school and child care facilities. Whether lead in schools is addressed in a proactive or a reactive mode, most successful case studies suggest that the school or child care leadership benefit from expert third-party voices. The level of involvement among these partners varies, but they may include:

- Local building and plumbing inspection staff
- Teachers organizations
- Parental organizations
- Active community organizations
- Local government (i.e., city, county, town)

In some situations, school and child care facilities may benefit from consultant support. Examples might include assistance from laboratory services, engineering firms and communication experts.

In some school or child care settings the facility administrator may organize a stakeholder committee process. In some instances, the local drinking water utility will participate as a technical resource. The choice and scale of such an effort will reflect the local situation and the size of the school.

## APPENDIX F. UNDERSTANDING THE SIGNIFICANCE OF PLUMBING PROFILE

**When was the facility constructed?** Plumbing before 1930 is most likely to contain lead. Between 1920 and 1950, galvanized pipes were used for plumbing. After 1930, copper generally replaced lead. Up until the late 1980s, lead solders were typically used to join copper pipes. The lead-free requirements of the 1986 Safe Drinking Water Act banned lead solder with more than 0.2% lead and plumbing with more than 8% lead. Buildings did not have to be built with certified "lead-free" fixtures until 1997.

**Are there new buildings and additions?** New buildings are unlikely to have lead pipes, but they are likely to have copper pipes with solder joints. Buildings built prior to 1986 are likely to have joints made of lead solder. Some brass fittings, although they contain less than 8% lead in alloy, may still contribute a significant amount of lead to drinking water.

**When were plumbing repairs made?** Corrosion is a result of the chemical reaction between water and pipes. Known as galvanic reaction, this can be vigorous in new piping until a protective layer is built up. After about five years, the reaction usually slows down, and lead enters the water as a result of more typical corrosion. If water supplied to a facility is corrosive, lead can remain a problem regardless of the age of the plumbing.

**What material is used in the service line?** Historically lead piping was used in some communities for service lines that join buildings to public water supplies. Lead pipes are dull gray in color and may be easily scratched by a metal object. Lead pipes can be a major source of lead contamination. Galvanized pipes are gray and usually fitted together with threaded joints. Copper pipes are red-brown in color. Corroded portions may show green deposits. Plastic pipes should meet NSF International Standards for drinking water.

**Are brass fittings, faucets or valves used in your facility?** Brass is composed of two metals, commonly copper and zinc. Brass fittings used in drinking water taps / outlets often contain up to 8% lead. This is considered "lead-free" under the Safe Drinking Water Act. Contamination may still take place. The amount of lead that will leach from brass products with less than 8% lead is dependent upon the corrosiveness of the water and the processes employed in manufacturing the products. New brass may leach higher levels of lead until it passivates.

**Type of taps / outlets used for drinking water?** Components of the system, lead solders and lead in brass may all be sources of lead.

**What are the brands and models of water coolers?** Water coolers may be a major source of lead contamination. Under the Lead Contamination Control Act of 1988, water coolers with lead-lined tanks are considered to be imminently hazardous consumer products, and manufacturers and importers are to repair, replace or recall these coolers. Limits for solder, flux, and storage tank interior surfaces in contact with drinking water may not contain more than 0.2% lead. Other parts of water coolers that may come in contact with drinking water are not to contain more than 8% lead. The law attaches criminal and civil penalties for the manufacture and sale of water coolers containing lead.

**Do faucets have accessible screens and when were they cleaned?** Lead-containing sediments that are trapped on screens can be a source of significant contamination. Sediments may need to be tested, and screens should be cleaned frequently.

## APPENDIX G. EXAMPLE SAMPLING PROTOCOL

Presented below are the general procedures for collecting samples of water for lead testing. Some environmental service providers and environmental laboratories will provide on-site sampling. Sampling by school or child care personnel is also an option. All personnel who assist in sampling should be adequately trained in proper sampling procedure, including site-specific record-keeping requirements. The following is a generic sample collection protocol.

### Sample Containers

Obtain sample containers from the laboratory that will be performing the lead analysis.

#### Caution

Only use containers from a certified laboratory.

### Sample Collection

Be certain to carefully follow the instructions provided by the laboratory.

1. Collect all water samples before the facility opens for the day and any water usage occurs.

#### Caution

Do not rinse the sample containers before filling.

2. The water must have sat in the pipes for at least 8 hours and not more than 18 hours before a sample is taken.
3. Do not collect samples after vacations, weekends or holidays.
4. Collect a 250-milliliter sample in the container provided by the laboratory from each outlet of interest without wasting any water before sampling the outlets.
5. Assign a unique sample identification number to each sample. Record that number on the recordkeeping form.
6. Accurately complete the recordkeeping form immediately following the collection of each sample. **Accurate information about the sample is essential.**
7. Ship the sample as instructed.

## APPENDIX I. RESPONSE ACTIONS TO BE USED AFTER HIGH LEAD LEVELS ARE FOUND

### Control Measures

Clean debris from all accessible screens frequently. If sediment is found in faucet screens, have the sediment tested by a laboratory and continue to clean screens frequently.

Use only cold water for food and beverage preparations in cafeterias and cooking classes. Hot water will dissolve lead more quickly than cold water and is therefore more likely to contain increased lead levels.

Turn off water to the tap / outlet using available valves or by capping the water line to taps / outlets where elevated levels of lead are identified. When taking this approach, the facility must continue to meet applicable codes for availability / accessibility of drinking water within the facility.

EPA guidance, Lead in Drinking Water in Schools and Non-Residential Buildings, provides specific recommendations for assuring adequate turn over of water in facility plumbing (see pages 31 and 32 of the guidance document). The following is a brief summary of that guidance.

- Flush the piping system in the facility.

First-flush water that has been in contact with the facility plumbing for more than six hours should not be consumed. Flushing involves opening all suspect taps / outlets every morning before the facility opens and letting the water run for a period of time to clear water standing in the interior pipes and taps / outlets.

Locate the tap / outlet farthest from the service line on each wing and floor; open the tap / outlet wide and let the water run for 10 minutes. For precise results, calculate the volume of the plumbing and flow rate -- exact determinations likely require assistance from a plumber or engineer.

Open all valves at all drinking water fountains without refrigeration units and let the water run for one minute.

Let the water run on refrigerated water fountains for 15 minutes. Because of the long time period required, routine flushing of these units may not be practical. Replacing them with lead-free units may be necessary.

Open all kitchen taps / outlets (and any other taps /outlets used for drinking and/or cooking purposes) and let water run for one minute.

- Consider providing bottled water. This can be an expensive alternative. If this is the selected option, obtain a written statement from the bottled water distributor guaranteeing that the bottled water meets FDA and state standards.

If provided, procedures on the use and care of dispensers/bottles must be developed and implemented. A very good source of information on this topic (and other topics related to lead in schools) can be found on the website of the Massachusetts Department of Environmental Protection at: <http://www.mass.gov/dep/brp/dws/lead.htm>. Taking steps



## APPENDIX J. EXAMPLE MAINTENANCE CHECKLISTS

### Maintenance Checklist

Name of Facility: \_\_\_\_\_

Address: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Phone #: ( \_\_\_\_\_ ) \_\_\_\_\_

ACTIVITY TO BE EVALUATED	Yes	NO	Action
<b>Plumbing Related to Drinking Water Fixtures</b>			
Plumbing survey has been conducted?			
Alterations made to existing plumbing system?			
Certified components/materials used?			
Licensed plumber for the installation/modifications/alterations?			
Drinking/cooking outlets flushed at the start of each school day?			
<b>Drinking Fountains</b>			
Drinking fountains checked for known lead-containing models?			
Drinking fountains on the list of known lead-containing models removed?			
Collection/testing of water samples for lead has been implemented?			
Remedial actions implemented for fountains exceeding the action limit?			
Fountains exceeding the action limit after remedial actions removed?			
<b>Cafeteria (if applicable) and Cooking Classes (if applicable)</b>			
Faucets included in a regularly scheduled sampling/testing program?			
Only cold water is used for preparing foods and beverages?			
<b>Bottled Water (if used) Water (if used)</b>			
Bottled water is a substitute for devices taken out of service?			
Bottled water supplier approved by Arizona Department of Health?			
Bottled water stored in a safe, secure area?			
Dispensers cleaned regularly?			
<b>Record Keeping</b>			
Drinking Water Testing/Quality Records in a centralized and clearly labeled file?			

Evaluation of Results: (check all that apply)

- ☐ School in compliance
 ☐ Treatment units planned (Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_)
 ☐ Additional testing needed (Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_)
 ☐ Bottled water proposed (Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_)
 ☐ Flushing proposed (Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_)
 ☐ Educational notice for parents and school proposed (Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_)
 ☐ Other actions planned \_\_\_\_\_ (Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_)

Source: Arizona Department of Health. A Manual for Assessing Lead In Drinking Water in Arizona Schools and Day Care Facilities, October 2004.

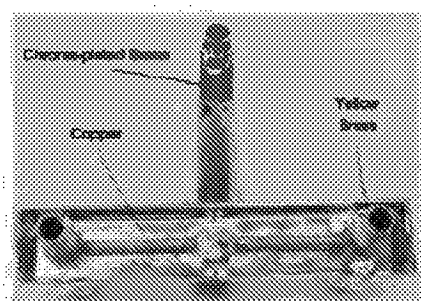
## HOW DOES LEAD GET INTO WATER?

*Lead enters the water ("leaches") through contact with the plumbing.*

Lead leaches into water through:

- Corrosion of
  - Pipes
  - Solder
  - Fixtures and Faucets (brass)
  - Fittings
- Particles caught in aerators

Water characteristics, such as pH, hardness and temperature, affect the amount of leaching.



A. Green, Pittsburgh Water Dept.

## WHY SHOULD WE TEST THE WATER?

*Lead is a health risk to infants and children.*

Exposure to lead is a significant health concern, especially for pregnant women, young children and infants, whose growing bodies tend to absorb more lead than the average adult. Drinking water is one possible exposure route for lead. A dose of lead can have a big effect on a little body, especially an infant whose diet is mostly liquid.

The longer water remains in contact with leaded plumbing, the more opportunity exists for lead to leach into the water. Facilities with prolonged periods of no water usage, such as schools and day cares, may have elevated lead concentrations in the water.

Many children spend a significant part of their days at school or in a child care facility. The fixtures that provide water for consumption,

including drinking, cooking lunch, and preparing juice and infant formula, should be tested.

*Testing is the only way to confirm if lead is present or absent.*

Lead solder with more than 0.2% lead and plumbing with more than 8% lead were banned in 1987. Buildings did not have to be built with certified "lead-free" fixtures until 1997. Even new, certified components can leach some lead.



*Water System tests do not give the whole picture.*

Most water systems test for lead as a regular part of water monitoring. These tests give a system-wide picture but do not reflect conditions at a specific drinking water outlet.

## **APPENDIX L. QUESTIONS AND ANSWERS – LEAD IN DRINKING WATER**

**Q: How does lead get into water?**

**A:** Lead generally enters drinking water after contact with a building's plumbing system. Lead may be present in the components of the plumbing system such as lead solder, brass fixtures and lead pipes. The amount of time the water is in contact with the lead components of the plumbing system is typically the factor that contributes most significantly to the amount of lead in the water supply.

**Q: Why should we test the water?**

**A:** The only way to determine how much lead is present in the drinking water in your facility is to have the water tested for lead.

**Q: Why is lead a health concern?**

**A:** Lead is a toxic material that is known to be harmful to humans if ingested or inhaled. Lead can cause damage to the brain, kidneys, nervous system and red blood cells. Children, infants, pregnant women and their unborn children are especially vulnerable to the harmful effects of lead. Lead has been associated with impaired mental and physical development in children.

**Q: How are children exposed to lead?**

**A:** Children can be exposed to lead from a number of sources, including lead-based paints in housing built prior to 1978, lead-contaminated dust and soil and drinking water. Drinking water typically is not the primary source of exposure to lead for children.

**Q: Why is lead a special concern for schools and child care facilities?**

**A:** Children are more vulnerable to the effects of lead exposure. Growing children will also absorb the lead that they consume more rapidly than adults. In addition, children at play may come into contact with more sources of lead, such as dirt and dust, than adults.

**Q: At what level does the U.S. EPA recommend taking action on lead results from water in schools?**

**A:** The U.S. EPA recommends taking action if lead levels in drinking water in schools at 20 parts per billion or greater.

- ▶ Some home treatment devices remove lead, but not all do. Before you purchase a home treatment device, you should verify the manufacturer's claims. A good resource to assist you is NSF International – [www.nsf.org](http://www.nsf.org). Once a treatment device is installed, make sure it is properly maintained.
- ▶ Use only cold water for cooking or drinking. Lead leaches more easily into hot water than cold water. Boiling water DOES NOT remove lead.
- ▶ Consult with your family doctor or pediatrician to receive a blood test for lead and learn more about the health effects associated with exposure.



American Water Works  
Association

"The Authoritative Resource for Safe Drinking Water"

6666 West Quincy Avenue  
Denver, CO 80235-3038  
[www.awwa.org](http://www.awwa.org)  
303.733.3439

- Lead enters drinking water as a result of corrosion, as water comes into contact with lead materials over a period of time. If standing water is in contact with lead materials for several hours, the water may accumulate lead levels that are of concern.
- Water providers adjust their treatment procedures to achieve "optimized corrosion control," which significantly reduces the amount of lead leaching into the water.

#### **What is the Lead and Copper Rule?**

- The Lead and Copper Rule provides a framework for utilities to a) determine if their corrosion control program is effective at limiting lead exposure; b) take additional steps to protect public health; c) and ensure consumers are notified if the utility finds lead above the action level in the community.
- The Lead and Copper Rule is based on a "treatment technique" requirement in which the lead action level is a trigger – the action level is not health based.
- Monitoring under the LCR takes place at worst-case sampling locations as samples are taken of water standing overnight in homes where lead pipe or lead solder is present.
- If the results from lead testing exceed the EPA "action level" of 15 parts per billion in more than 10 percent of homes tested, individual water utilities are required to notify area residents via newspapers, radio, TV and other means.
- EPA's most recent data confirms that the elevated lead levels in Washington, D.C., are not common nationwide. More than 96 percent of utilities reporting data do not exceed the 15-parts-per-billion action level for lead.  
([http://www.epa.gov/safewater/lcrr/lead\\_data.html](http://www.epa.gov/safewater/lcrr/lead_data.html))

#### **How is the water community responding to issues of lead in drinking water?**

- The drinking water community supports the thorough examination of the situation in Washington, D.C. and the Lead and Copper Rule, which EPA is now undertaking.
- The American Water Works Association has testified before U.S. Congressional committees about this subject. Testimony is available at:  
[http://www.awwa.org/Advocacy/govtaff/legislat/leg\\_test.cfm](http://www.awwa.org/Advocacy/govtaff/legislat/leg_test.cfm)
- EPA is hosting a series of workshops to further study all aspects of lead in drinking water, including recent sessions on public communication of lead issues and lead in schools.
- The American Water Works Association has convened working group of utility professionals examining the lead in drinking water issue and identifying best practices.

#### **How can consumers protect themselves from lead in drinking water?**

While water providers have taken steps to limit lead in drinking water, consumers can take the following steps if concerned about lead exposure:

- Find out about lead testing results in their community. Each utility's annual Consumer Confidence Report contains information on lead monitoring conducted under the Safe Drinking Water Act. If they do not have a Consumer Confidence Report, they can contact their utility for a copy.
- You can't see, smell or taste lead in your water. ***Testing at the tap is the only way to measure the lead levels in your home or workplace.*** If consumers choose to have their tap water tested, they should use a properly certified laboratory (they can call their utility to obtain a list). Testing usually costs between \$20 and \$100.

**Areas of AwwaRF Research:**

**Corrosion Control Effects on Water Quality and Corrosion**

*Distribution system Water Quality Changes Following Corrosion Control Strategies (2000)*

*A General Frame Work for Corrosion Control Based on Utility Experience (1997)*

*Role of Phosphate Inhibitors in Mitigating Lead and Copper Corrosion (2001)*

*Treatment Process Effects On Lead and Copper Corrosion*

*Chloramine Effects on Distribution Systems Materials (1993)*

*Optimizing Chloramine Treatment (Currently in publication)*

*Impacts of Enhanced Coagulation on Corrosion of Water Treatment Plant Infrastructure (2004)*

*Disinfectant Decay and Corrosion: Laboratory and Filed Studies (2004)*

*Specific Water Chemistry Effects on Lead and Copper Corrosion*

*Corrosion and Metal Release for Lead Containing Plumbing Materials (1999)*

*Tools to Help Utilities Manage Lead and Copper Corrosion Issues*

*Development of a Pipe Loop Protocol for Lead Control (1994)*

*Optimizing Corrosion Control in Water Distribution Systems (2004)*

*Post-Optimization Lead and Copper Monitoring Strategies (2004)*

*Lead Pipe Rehabilitation and Replacement Techniques (2000)*

*Lead Control Strategies (1990)*

**Contact AWWA Public Affairs for more information**

Greg Kail, Senior Public Affairs Manager

[gkail@awwa.org](mailto:gkail@awwa.org) | 303-734-3410

Kylah Hedding, Public Affairs Manager

[khedding@awwa.org](mailto:khedding@awwa.org) | 303-347-6140

<http://www.epa.gov/safewater/lcrrmr/nursery.pdf>

Guidance Manual - "*Lead in Drinking Water in Schools and Nonresidential Buildings*"<sup>7</sup>  
<http://www.epa.gov/safewater/consumer/leadinschools.html>

Controlling Lead in Drinking Water for Schools and Child Care Centers: A Summary of State Programs -  
[http://www.epa.gov/safewater/lcrrmr/pdfs/report\\_lcrrmr\\_schoolsummary.pdf](http://www.epa.gov/safewater/lcrrmr/pdfs/report_lcrrmr_schoolsummary.pdf)

Implementation of the Lead and Copper Rule  
<http://www.epa.gov/safewater/lcrrmr/implement.html>

#### *Individual State Programs (Examples)*

**Arizona Department of Environmental Quality**  
A Manual for Assessing Lead In Drinking Water in Arizona Schools and Day Care Facilities  
<http://www.azdeg.gov/download/lead.pdf>

**Massachusetts Department of Environmental Protection**  
Lead and Copper in Schools –  
<http://www.mass.gov/dep/brp/dws/lead.htm>

**Minnesota Department of Health**  
Reducing Lead in School Drinking Water  
<http://www.health.state.mn.us/divs/eh/water/schools/index.htm>

#### *Plumbing Standards*

NSF International  
<http://www.nsf.org>

#### **Hotlines:**

National Lead Information Center: 800-424-LEAD

EPA Safe Drinking Water Hotline: 800-426-4791

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<sup>7</sup> Ibid.

**Thelen, Mary Beth (DEQ)**

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**From:** GOV Newsroom <govnewsroom@govsubscriptions.michigan.gov>  
**Sent:** Friday, October 02, 2015 1:58 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** NEWS RELEASE: Gov. Rick Snyder: Comprehensive action plan will help Flint residents address water concerns

Governor Rick Snyder  
**REINVENTING MICHIGAN**  
Getting It Right. Getting It Done.

## News Release

**Contacts:** Sara Wurfel or Dave Murray  
517-335-6397

Brad Wurfel, 517-284-6713  
Department of Environmental Quality

**FOR IMMEDIATE RELEASE**  
Friday, October 2, 2015

Jennifer Eisner, 517-230-9804  
Department of Health and Human  
Services

**Editor's Note:** Click here for infographic and action plan.

# **Gov. Rick Snyder: Comprehensive action plan will help Flint residents address water concerns**

*Collaborative effort with state, federal and city leaders focuses on testing, assistance*

FLINT, Mich. – Flint residents need to have access to safe, clean, water now and long into the future, Gov. Rick Snyder said, announcing a comprehensive action plan created with state, federal and city leaders to address concerns about drinking water.

The water leaving Flint's drinking water system is safe to drink, but some families with lead plumbing in their homes or service connections could experience higher levels of lead in the water that comes out of their faucets.

The action plan focuses on increasing water testing, offering additional precautions for families with lead plumbing in their homes, and providing long-term solutions to address the city's water infrastructure challenges. The plan



was created at Snyder's direction by the Michigan Departments of Environmental Quality (DEQ) and Health and Human Services (DHHS), the U.S. Environmental Protection Agency, and the city of Flint.

"We are focused on helping ensure safe, clean, accessible drinking water and addressing and mitigating concerns and protecting public health," Snyder said. "Today's action plan builds upon ongoing work with local, state and federal agencies and our partnership with city and community leaders. Together, we are working to ensure that all Flint residents have accurate information and know that help is available to address potential problems."

The city and the state also are working together to gather more data to ensure the water that leaves the treatment plant as well as the water that arrives in Flint homes is safe for all residents. The plan includes:

- Testing in Flint public schools immediately to ensure that drinking water is safe, with testing also available at no cost to any other school in Flint.
- Offering free water testing to Flint residents to assure their drinking water is safe.
- Providing free water filters to residents.
- Expanding health exposure testing of individual homes.
- Accelerating corrosion controls in the Flint drinking water system.
- Accelerating water system improvements to address replacing lead service lines.
- Expediting the completion of the Karegnondi Water Authority pipeline.
- Expanding a Safe Drinking Water Technical Advisory Committee to ensure the best technology, practices and science are being followed by adding an expert from the Environmental Protection Agency's Office of Research and Development to the group.
- Naming Dr. Eden Wells, chief medical executive for the Michigan Department of Health and Human Services, as the Flint drinking water public health adviser.
- Boosting a comprehensive lead education program to make sure residents have detailed information about how to protect themselves and their homes.

Residents can have their water tested by calling 810-787-6537 and pressing 1, or emailing [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com). The DEQ is covering the cost of this testing.

State leaders have been working closely with state and federal lawmakers to tap resources at all levels of government to address concerns.

State health experts said there has been an increase in elevated childhood blood lead levels in some specific communities. Initial analysis of MDHHS data found that blood lead levels of children in Flint have followed an expected seasonal trend. While this analysis for Flint as a whole remains true, a comprehensive and detailed review breaking down data by ZIP codes with the city revealed that MDHHS data is consistent with a study presented recently by Hurley Children's Hospital.

"While we cannot conclusively say that the water source change is the sole cause of the increase, this analysis supports our efforts as we take active

steps to reduce all potential lead exposures in Flint," MDHHS Director Nick Lyon said. "As part of this, we are working closely with our public and private partners to provide Flint residents on MDHHS assistance programs with free water filters and inform families about the steps they can take to reduce all lead exposures in their home."

As a part of the action plan, National Sanitation Foundation certified water filters will be made available to Flint residents through emergency state funds and coordinated efforts with local community agencies and donors. Information about how to obtain the filters will soon be available.

"This action plan offers concrete steps we will take in a local, state and federal partnership to ensure all Flint residents have safe water to drink," DEQ Director Dan Wyant said. "The DEQ will work closely with the city to gather further data to ensure the water that leaves Flint's system as well as the water that arrives in Flint homes is safe to drink."

Additional information is available at [www.michigan.gov/flintwater](http://www.michigan.gov/flintwater).

###

STAY CONNECTED:



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This email was sent to thelenm2@michigan.gov on behalf of: The Executive Office of the Governor · 111 South Capitol Avenue · Lansing, MI 48909 · 517-335-7858

9:00 AM First Water Meeting 10/15/15

- Time Line

Report to 1967 Via First Draw Under From The First River?

- At One Time ~~it~~ was Rated for Reduction of

Reasonable Water Was Identified as Alternative To Permit

~~2009~~ 2009 Prelim Designs For KWA By Gensler

2012-2013 is When First Contaminated The River

DND & First Could Not Come To Agreement

There Was A Local Decision (Not Unanimous) Supported

By Emergency Manager To Switch To First River

---

Line Spreading Raises PH & Therefore is A Type of

- Corrosion Control

- Why Did We Not Require Prostate For Corrosion Control?

Systems > 50 K Were Allowed To Optimize  
By Running & Testing ~~it~~ Treated As A  
New Supply Requirement ~~Q~~ IS 5PPB.

- Did Disagree With ~~it~~ On The Requirement  
To Immediately Use Prostate ~~it~~ Had Agreed That  
The Two Tankers To As To Evaluate.

- Water Withdrawal Permit Was ~~Not~~ Already Approved  
Permits Were Only Required For Construction.

OK

- First Is Per What Do  
We Know?

- Protective Cover Shifted?  
Sited Any Kind?

## Flint Drinking Water Action Plan Update

The Action Plan was announced on October 2, 2015. It included the following:

- Testing in Flint public schools immediately
- Offered free water testing to Flint residents
- Provided free water filters to residents with concerns or who are included in state assistance programs
- Expanding health exposure testing of individual homes
- Accelerating corrosion controls in the Flint drinking water system
- Accelerating water system improvements to address replacing lead service lines
- Expediting the completion of the Karegnondi Water Authority pipeline
- Expanding a Safe Drinking Water Technical Advisory Committee
- Named Dr. Eden Wells as the Flint drinking water public health advisor
- Boosted a comprehensive lead education program

### Testing in Flint Public Schools Immediately

Samples were taken on October 2 and were received at DEQ laboratory over the weekend. Test results to date indicate 37 samples tested, 4 of which exceeded a federal action level, and 1 of those 4 was a significant outlier. We will be compiling detailed information about which schools and area codes the test results came from and will be providing that information in our next update.

We have met with DHHS, and we are working on developing response protocols, a communications plan, and guidance for schools when this data is reported.

### Offered Free Water Testing to Flint Residents

We have received 4 sets of samples from Flint that represent individual residents. We will be compiling the total number and the results of those samples and reporting in a future report.

### Provided Free Water Filters to Residents with Concerns or Who are Included in State Assistance Programs

DHHS held organizational meetings in Flint on October 5, and filter distribution by DHHS started on October 6. Nick Lyon in DHHS is taking the lead in filter distribution.

### Expanding Health Exposure Testing of Individual Homes

Dr. Wells and Dan Wyant have been in conversations about a protocol for exposure testing. Dr. Wells will take the lead on developing the protocol.

### Accelerating Corrosion Controls in the Flint Drinking Water System

## What is missing?

- ✓ Superintendent/School Principals
- ✓ GCHD
- ✓ Legislators-Ananich, Kildee, Neeley, Phelps
- ✓ DHHS/LARA
- ✓ EPA

- ✓ Freeman Elementary data
- ✓ Home tests
- ✓ Lead blood levels
- ✓ Other schools

- ✓ Releasing press release with PDF on data attached to it? **NO, NOT WORTH IT**
- ✓ Should we have a map of homes tested? **NO, NOT WORTH TIME**
- ✓ Are we releasing addresses? **NO, IN FUTURE**
- ✓ Are we paying for replacement of the fountains in schools? **YES**
- ✓ Are we releasing the schedules of schools being tested? **NO, NO, NOT WORTH TIME**
- ✓ Are we mentioning how other schools can get tested? **YES**

## 5. Next Steps

- ✓ Do not use the fixtures
- ✓ Flush the system
- ✓ Replace the fixtures
- ✓ The responsibility and ability to pay for the replacement is not with the state. Local schools have the funding to do capital improvement projects.
- ✓ How much do the fixtures cost?

6. Who is going to speak on this? George and Sygo

Thelen, Mary Beth (DEQ)

64

**From:** Workman, Wayne (TREASURY)  
**Sent:** Wednesday, October 14, 2015 12:16 PM  
**To:** Muchmore, Dennis (GOV); Saxton, Thomas (Treasury)  
**Cc:** Wyant, Dan (DEQ); Roberts, John (DTMB); Baird, Richard (GOV); Khouri, Nick (TREASURY)  
**Subject:** RE: Flint telephone call this morning

We will advise the City to proceed immediately

Wayne L. Workman  
Deputy State Treasurer  
Michigan Department of Treasury

**From:** Muchmore, Dennis (GOV)  
**Sent:** Wednesday, October 14, 2015 12:10 PM  
**To:** Saxton, Thomas (Treasury) <[SaxtonT@michigan.gov](mailto:SaxtonT@michigan.gov)>  
**Cc:** Wyant, Dan (DEQ) <[WyantD@michigan.gov](mailto:WyantD@michigan.gov)>; Roberts, John (DTMB) <[RobertsJ9@michigan.gov](mailto:RobertsJ9@michigan.gov)>; Workman, Wayne (TREASURY) <[WorkmanW@michigan.gov](mailto:WorkmanW@michigan.gov)>; Baird, Richard (GOV) <[bairdr@michigan.gov](mailto:bairdr@michigan.gov)>; Khouri, Nick (TREASURY) <[KhouriN@michigan.gov](mailto:KhouriN@michigan.gov)>  
**Subject:** Re: Flint telephone call this morning

Yes, please go ahead. The faster the reconnect occurs the more quickly confidence will be rebuilt.

On Oct 14, 2015, at 10:39 AM, Saxton, Thomas (Treasury) <[SaxtonT@michigan.gov](mailto:SaxtonT@michigan.gov)> wrote:

I assume we tell them to proceed? I am not aware of the timing on legislative action. The pay to DWSD will ultimately be paid out over time (e.g, say Nov thru June).

**From:** Byrne, Randall (Treasury)  
**Sent:** Wednesday, October 14, 2015 10:21 AM  
**To:** Workman, Wayne (TREASURY) <[WorkmanW@michigan.gov](mailto:WorkmanW@michigan.gov)>; Saxton, Thomas (Treasury) <[SaxtonT@michigan.gov](mailto:SaxtonT@michigan.gov)>  
**Cc:** Schafer, Suzanne K. (Treasury) <[SchaferS7@michigan.gov](mailto:SchaferS7@michigan.gov)>  
**Subject:** Flint telephone call this morning

Tom and Wayne:

During our telephone call today, Mayor Walling indicated that they have received the go ahead from the Drain Commissioner and are performing the bacti tests on the eight mile waterline. If all goes well, they may be able to begin to use DWSD water soon. The Mayor wanted to know if they can use DWSD water before the Legislature takes action on the \$6M assistance package? Please advise.

Thanks,  
Randy

Randall Byrne | State Administrative Manager  
Local Government Services - Office of Fiscal Responsibility  
<image001.jpg> State of Michigan | 430 W. Allegan Street, 3rd Floor | Lansing, MI 48922  
(517) 335-2521 | (517) 373-0633 (fax) | [ByrneR1@michigan.gov](mailto:ByrneR1@michigan.gov)

Think Green! Don't print this e-mail unless you need to.

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# **City of Flint Water Action Steps for Week of October 19-23**

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
1.	Update 2004 letter to EPA	DEQ	Dana DeBruyn	
2.	Schedule Flint Water Treatment Plant tour	DEQ and Flint	George Krisztian	To be scheduled for week of 10/19/15, waiting on confirmation from Flint
3.	Figure out number of samples from schools and child care facilities	DEQ	Jim Sygo Pat Cook Steve Busch	1300 100 PER SCHOOL 13 SCHOOLS
4.	Conduct After Action Plan	DEQ	George Krisztian Madhu Anderson	Initial meeting to be scheduled for week of 10/19/15
5.	Introduce legislative changes to Part 54 of NREPA – Drinking Water Revolving Loan Fund	DEQ, Treasury, and EPA	Maggie Pallone George Krisztian Sonya Butler	DRAFT LANGUAGE SUBMITTED TO MAINE PROSECUTOR FOR REVIEW
6.	After Action Review Panel	DEQ	Madhu Anderson George Krisztian Karen Tommasulo	
7.	Staff hiring plan	DEQ	Jim Sygo Maggie Pallone George Krisztian	
8.	\$1 million for DEQ Laboratory billing code	DEQ	Maggie Pallone George Krisztian	
9.	Finalize fiscal year 2017 budget request	DEQ	Maggie Pallone George Krisztian	

*This item has been incorporated as part of the after action plan.*

*SUBMITTED FOR REVIEW 23, 2015 11:30AM*

*ITEMS FOR 10/20/15 REPORT*



Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
10.	Develop letter to schools	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	This has been incorporated into action step 13
11.	Finalize sampling protocol	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	Comments on DLARA have been received
12.	Confirm school sampling logistics	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
13.	Meeting(s) with school staff/management	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	A meeting with the 10 remaining schools is tentatively scheduled for the week of Oct 20
14.	Complete Non-Transient Non-Community Water Supply letter	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	Incorporated into action plan
15.	Meet with DHHS and discuss all lead education material for schools	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	DHHS has been contacted to set up a meeting
16.	ODWMA staff observe a DLARA plumbing assessment	DEQ and DLARA	Jim Sygo Steve Busch Pat Cook Mike Prysby	Scheduled for 10/21

*Added this step 10/19/15*

*The initial plumbing assessment is scheduled for 10/23 & sampling to occur on 10/24.*

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
17.	Develop sample form and chain of custody document	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	The DEQ LAB has created a fillable PDF.
18.	Provide Director Wyant with revised Part 54 language	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
19.	Review corrosion control treatment plan and get any EPA comments	DEQ and EPA	Jim Sygo Steve Busch Pat Cook Mike Prysby	Initial comments by EPA received. Awaiting further discussions to take place.
20.	Review construction permit application and issue construction permit for phosphate equipment	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	Permit in process.
21.	Review Standby Operation of Flint Water Treatment Plant with city of Flint	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
22.	Provide city of Flint updated monitoring schedule based on Detroit Water and Sewerage Department (DWSD)/Great Lakes Water Authority (GLWA) service	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
23.	Contact city of Flint and Genesee County daily for DWSD connection status updates	DEQ, Flint, and Genesee County	Jim Sygo Steve Busch Pat Cook Mike Prysby	<del>SWITCH TO DETROIT</del> WATER MADE ON 10/16/14 <del>STATUS UPDATE</del> GIVEN BY HOWARD CROFT TO GEORGE KRISTIAN ON 10/19/15.

Conference call with EPA held on 10/16/14 to discuss comments.

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
24.	Work with Karegnondi Water Authority (KWA) and other agencies to address bottleneck issues	DEQ and KWA	Jim Sygo Steve Busch Pat Cook Mike Prysby	
25.	Verify city of Flint distribution operations under DWSD/GLWA service	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
26.	Contact city of Flint for Service Line Record status update and obtain a copy of the records to date	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
27.	Provide DHHS with any available cross-reference information	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	
28.	Develop childcare facility guidance or review DHHS related materials	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	<i>DEQ has contacted DHHS to schedule a meeting.</i>

## Flint Drinking Water Action Plan Update

### **FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGE**

#### **Key Actions:**

Due to the Thanksgiving holiday, this week's report is abbreviated.

#### **Positions:**

There are no new positions to report since last week.

#### **Concerns:**

There are no new concerns to report since last week.

#### **Significant Events:**

There are no significant events to report since last week.

#### **Changes from Previous Report:**

- The Flint Drinking Water Events Timeline has been revised. The header and footer were updated, and acronyms were generally removed. Permit numbers have been deleted, and dates were filled in to the extent possible. The most significant change is the December 31, 2014, item regarding end of the 1st monitoring period. This was rewritten to be consistent with the June 30, 2015, end of the 2nd monitoring period item. The compliance letter reporting the results was added on March 30, 2015.
- School sampling was suspended due to the holiday and is scheduled to continue on Saturday, December 5, 2015.
- The report for Eisenhower Elementary School was completed, has gone through final publishing, and will be posted to the Flint water Web site: [www.mi.gov/flintwater](http://www.mi.gov/flintwater).
- There are now a total of four schools in Flint that are not part of the Flint Community Schools that have requested plumbing assessments and sampling of their facilities. These facilities will be evaluated once the Flint school system evaluation has been completed. The four facilities include: Eagle's Nest Academy, Powers Catholic High School, International Academy of Flint, and St. Paul Lutheran School. It is anticipated that these facilities will be evaluated beginning sometime in January 2016.

**FOIA EXEMPT AND ATTORNEY-CLIENT PRIVILEGE**

Flint Drinking Water Action Plan Update

Page 2

- The internal after action group met on November 24, 2015, to discuss the newly-created 18-Point Partnering Plan. Each point was reviewed, and members were instructed to use the document as a plan moving forward. The Partnering Plan is meant to be a living document and will be revised as needed.

**Other Items:**

- Attached is the revised Flint Drinking Water Events Timeline.
- Attached is the Eisenhower Elementary School report.

Prepared by: George Krisztian, Flint Action Plan Coordinator  
Laboratory Director  
Department of Environmental Quality  
Telephone: 517-284-6719  
Cell: PPI  
November 30, 2015

## Executive Summary for a Health-Based Drinking Water Lead Level

October 26, 2015

**Objective:** Identify health-based drinking water lead level(s) to allow re-opening of school and/or daycare water fountains/faucets for student use.

### Public Health Assumptions Included in the Model

The model estimates are only accurate if the following assumptions are met:

1. Children are not exposed to lead paint chips or lead paint dust (at home or elsewhere).
2. Children's drinking water at home is filtered and contains no more than 1 ppb of lead.
3. Children are exposed to lead soil concentrations typical of the urban environment in Flint (i.e. soil has not been impacted by lead-based paint).

Children's risk of having an elevated blood lead level will be greater than the model estimates if these assumptions are not met.

### Resulting risk from drinking water with the following lead concentrations:

The goal is that a child should have ***no more than a 5 percent risk*** of having a blood lead level greater than 5 micrograms per deciliter.

Risk of a child having an elevated blood lead level		
Daycare or School Drinking Water Lead Levels	less than 1 year old	less than 7 years old
0 ppb	4.4 percent	2.5 percent
2 ppb	5.0 percent	2.9 percent
5 ppb	6.0 percent	3.5 percent
11 ppb	8.3 percent	4.9 percent
15 ppb	10 percent	6.0 percent
30 ppb	18 percent	11 percent
100 ppb	55 percent	42 percent

OK

**Krisztian, George (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Saturday, May 02, 2015 10:35 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** Fw: Flint Corrosion Control?

FYI

---

**From:** Cook, Pat (DEQ)  
**Sent:** Friday, May 1, 2015 11:38 AM  
**To:** Deltoral, Miguel  
**Cc:** Porter, Andrea; Crooks, Jennifer; Poy, Thomas; Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Flint Corrosion Control?

Hi Miguel - sorry, I should have been more specific in my previous email. The rules you stated below allow large systems to be considered having optimal corrosion control if they have data from two consecutive 6 month monitoring periods that meet specific criteria. DEQ-ODWMA has not made a formal decision as to whether or not the City of Flint meets the exemption criteria or will be required to do a corrosion control study since Flint has only completed one round of 6 month monitoring. The City of Flint's second round of monitoring will be completed by June 30, 2015, and we will make a formal decision at that time. If my memory is correct, this is consistent with the process followed in the early 1990's for large systems when the Pb/Cu rule was first implemented. The Department waits until large systems complete both rounds of full scale, 6 month monitoring before making a decision about optimal corrosion control. If it is determined that Flint has to install corrosion control treatment, the rule allows up to 2 years to complete a study and 2 additional years to install the treatment unless we set a shorter time frame.

As Flint will be switching raw water sources in a just over one year from now, raw water quality will be completely different than what they currently use. Requiring a study at the current time will be of little to no value in the long term control of these chronic contaminants.

Finally, the City of Flint's sampling protocols for lead and copper monitoring comply will all current state and federal requirements. Any required modifications will be implemented at the time when such future regulatory requirements take effect.

Patrick Cook, P.E.  
Community Drinking Water Unit  
Office of Drinking Water & Municipal Assistance  
Michigan Department of Environmental Quality  
Phone: (517) 284-6514  
[cookp@michigan.gov](mailto:cookp@michigan.gov)

---

**From:** Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]  
**Sent:** Saturday, April 25, 2015 10:11 AM  
**To:** Cook, Pat (DEQ)  
**Cc:** Porter, Andrea; Crooks, Jennifer; Poy, Thomas  
**Subject:** Re: Flint Corrosion Control?

Hi Pat,

pat

---

**From:** Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]  
**Sent:** Friday, April 24, 2015 11:59 AM  
**To:** Cook, Pat (DEQ)  
**Cc:** Poy, Thomas; Porter, Andrea  
**Subject:** Re: Flint Corrosion Control?

What was the source water lead level?

Miguel A. Del Toral  
Regulations Manager  
U.S. EPA R5 GWDWB  
77 West Jackson Blvd, (WG-15J)  
Chicago, IL 60604  
Phone: (312) 886-5253

---

**From:** Cook, Pat (DEQ) <[COOKP@michigan.gov](mailto:COOKP@michigan.gov)>  
**Sent:** Friday, April 24, 2015 10:43 AM  
**To:** Deltoral, Miguel  
**Cc:** Poy, Thomas; Porter, Andrea  
**Subject:** RE: Flint Corrosion Control?

← STEVE 2/27/15 SAYS YES

Hi Miguel - Flint is currently not practicing corrosion control treatment at the WTP. When they started treating water at their WTP last spring, we placed them on full chart (100 sites) Pb/Cu monitoring for two consecutive 6 month periods. WQ monitoring is also being conducted. The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper. The second round of samples (Jan 1, 2015 – June 30, 2015) is underway with approximately 20 of the 100 sample site results in. The highest lead result out of the 20 received thus far is 13 ppb.

Based on the matrix of recommended corrosion control study components for Large PWS's for both Lead and Copper, there are no additional requirements for the City of Flint based on the levels of lead and copper in the current source water and the results of the lead and copper distribution monitoring. The only provision of the Lead & Copper Rule which classifies the existing treatment of large PWSs as optimized for corrosion control is when the difference between the 90% Pb-TAP and Pb-POE is less than the lead practical quantitative level (PQL) for each six-month period of the initial monitoring program. By definition, the PQL for lead is 0.005 mg/L; and the lead value for the source water used in this determination is the highest source water lead concentration. If this condition is met, then no study or testing is required. We believe this condition has been met for Flint. However, we will re-evaluate this after the 2<sup>nd</sup> round of 6 month sampling is completed.

↑ JULY 24<sup>TH</sup> NOTE EXPLAINS ONLY GD NEEDED DUE TO PQL

*EXPLANATION NEEDED FOR FULL UNDERSTANDING*

If you have any further questions, please contact the Lansing District Supervisor, Steve Busch at (517) 643-2314 or at [buschs@michigan.gov](mailto:buschs@michigan.gov).

Have a good (and hopefully warm) weekend!

Patrick Cook, P.E.  
Community Drinking Water Unit  
Office of Drinking Water & Municipal Assistance  
Michigan Department of Environmental Quality  
Phone: (517) 284-6514  
[cookp@michigan.gov](mailto:cookp@michigan.gov)



*\* WE NEED A PLAN JIM & GEORGE TO CHECK* *EXPEDITED CORROSION CONTROL* *ACTION ITEMS*

*- Howard Carr City of Flint*

*Whatever we can do  
to accelerate corrosion  
needs to be a priority*

*Working For Technical Committee*

# TAKING ACTION ON FLINT WATER

[www.mi.gov/FlintWater](http://www.mi.gov/FlintWater)

*- School Sampling Protocol*  
*- Members of Technical  
Advisory Committee*

## - The Action Plan -

■ Testing in Flint public schools immediately to ensure that **drinking water is safe**, with testing also available at no cost to any other school in Flint.

■ Offering **free water testing** to Flint residents to assure their drinking water is safe.

■ Providing **free water filters** to residents with concerns or who are included in state assistance programs. *11 MILLION FOR FILTERS THROUGH DHHS*

■ Expanding **health exposure testing** of individual homes. *WORK WITH DHHS ON THIS*

■ Accelerating **corrosion controls** in the Flint drinking water system.

■ Accelerating **water system improvements** to address replacing lead service lines. *BIG ONE FOR US BOOST TECHNICAL ADVISORY COMMITTEE*

*Dr. Ed Wells*

■ Expediting the completion of the **Karegnondi Water Authority** pipeline. *\* OPTIMIZED OR SWITCH BACK TO DETROIT? \**

■ Expanding a **Safe Drinking Water Technical Advisory Committee** to ensure the best technology, practices and science are being followed by adding an expert from the Environmental Protection Agency's Office of Research and Development to the group.

■ Naming Dr. Eden Wells, chief medical executive for the Michigan Department of Health and Human Services, as the **Flint drinking water public health adviser**.

■ Boosting a **comprehensive lead education program** to make sure residents have detailed information about how to protect themselves and their homes.

To get your water tested for free, please call the city of Flint Water Plant at (810) 787-6597 and then press 1.  
You can also email [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com)

Visit [www.mi.gov/FlintWater](http://www.mi.gov/FlintWater) for more information

**Current Issues**  
**January 4, 2015**

**Executive Office**

- Flint
- Michigan Petroleum Pipeline Task Force
- State of the State
- Lab
- Special Assistant Attorney General Contract

**Administration**

- 2017 Budget Development
  - Program Enhancements
  - Reductions
  - Appropriation Subcommittee Areas of Concern
- Senator Green's Fee Proposal
- Michigan Strategic Water Fund Initiative
- Bonds
- Michigan Underground Storage Tank Authority
- Office of Auditor General – Current Audits
  - Office of Waste Management and Radiological Protection
  - Office of Drinking Water and Municipal Assistance
  - Great Lakes Protection Bond
- Information Technology Governance Structure

**Air Quality Division**

- Air Toxic Rules
- Federal Implications of 111d Changes
- Asbestos Program
- Genesee Power Plant ACO

**Office of Drinking Water and Municipal Assistance**

- Stormwater, Asset Management, and Wastewater (SAW) Grants
- Revolving Loan Programs
- Michigan Infrastructure and Transportation Association Concerns
- Local Health Department Interaction
- Statewide Septic Code

**Office of Environmental Assistance**

- Environmental Justice
- Organizational Excellence
  - Staff Development
  - Process Improvement
  - Metrics (DEQ's response to Governor's permitting time issues)
  - Employee Engagement

**Office of Great Lakes**

- Water Strategy
- Waukesha Application
- KPMG Report on Infrastructure Needs

**Office of Oil, Gas, and Minerals**

- Budget Shortfall due to low oil and gas prices
- High Density Oil and Gas Development Workgroup

**Office of Waste Management and Radiological Protection**

- Recycling Council Updates
- Composting

**Remediation and Redevelopment Division**

- 201 Amendments
- 201 Criteria Workgroup
- Brownfield Amendments
- Willow Run

**Water Resources Division**

- Cass County Project
- Lake Erie Issues
- 404 Program Review
- Part 31 Water Rules
- MiWaters Implementation
- Aquaculture
- UP Wetland Violation

RIDE  
→ Lab move, future funding?  
Funding  
Gelman  
Dept  
Support

1. Testing all Flint schools, preschools and day cares.  
Summary of results to date (George to provide)

DRAFT  
BEFORE  
GEORGE  
CHECK

13 Facilities within

To date, all of the Flint Community Schools have undergone an initial plumbing evaluation to determine lead exposure risks. The results of these evaluations show that the primary source of exposure is from fixtures such as faucets and fountain heads. This is good news as these are relatively easy and inexpensive to replace compared to plumbing deep within the system. Once these fixtures have been replaced, additional testing will be conducted to ensure that the issues have been properly addressed. This free service is also being offered to all private schools and daycare facilities using the Flint water system and testing of those facilities will begin in January.

DELETE?

2. Offer water testing at no cost to Flint residents to assure safe water  
Summary of results to date (George to provide)

Flint residents have been offered free lead testing of the water in their home. To date, over 600 samples have been tested. While the overall results are encouraging and show that lead levels are trending downwards with the large majority of the results showing lead levels well within Federal guidelines, there are some results that show elevated levels that are concerning. Since lead levels in water can vary greatly from home to home it is important that all Flint residents take advantage of this free testing.

3. Expedite optimizing corrosion Control in the Flint drinking water system  
Summary of date completed (George to summarize)

that is treated with phosphate  
to control corrosion

On October 16<sup>th</sup> of 2015, the city of Flint moved back to using water from the Detroit Water and Sewer Department (DWSD). On December 9<sup>th</sup> the City of Flint began supplemental phosphate addition to the water to accelerate the rebuilding of the protective layer in the water distribution system. Additional work is also being done to ensure that appropriate corrosion controls are in place for when the city of Flint moves to the Karegondi Water Authority (KWA) for their source water. It is important to note that the water from the KWA will be coming from Lake Huron just like the water from the DWSD and the characteristics of the water will be similar.

Too  
Temple 2



GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

- DIVISION OF -

WATER & WASTE SERVICES

G-4610 BEECHER ROAD - FLINT, MICHIGAN 48532-2617

PHONE (810) 732-7870 - FAX (810) 732-9773

JEFFREY WRIGHT  
COMMISSIONER

## MEMORANDUM

DATE: October 7, 2015

TO: Wayne Workman, Deputy Director, Treasury Department  
Randall Byrne, State Administrative Manager

FROM: John F. O'Brien, P.E., Director

SUBJECT: Letter Dated September 30, 2015  
Wolfson to Henderson

---

My staff and I have reviewed the letter referenced above and have prepared this quick memorandum to explain the economics concerns and ramifications of the temporary cessation of the Flint water treatment operations and the return to DWSD/GLWA supply.

This memorandum is broken down into three parts: economics, procedure and concerns.

### Economics

Prior to April 2014, Flint held a water contract with DWSD. Flint also had the franchise rights to DWSD water for Genesee County. Therefore, Genesee County received DWSD water via the Flint. The water rate was calculated on that joint demand. In 2013-2014, the allocated cost was \$25,303,062 or \$738,066 per month plus \$13.01 per mcf.

In 2013, DWSD terminated the Flint contract effective April 2014. The Flint chose to go to the Flint River as its source water until KWA water was made available. With the contract terminated, the franchise was terminated and the county had to go to DWSD for water because Flint could no longer supply DWSD water and the Flint River and the Flint water treatment plant does not have the capacity to serve both utilities.

DWSD established a new rate for GCDC that included significant non-contract and non-member charges to access the water. GCDC also acquired approximately 9 miles of water main pipe from the Flint. (The Detroit water meter at the county line between Lapeer and Genesee and the Flint water plant is approximately 11 miles into the county.) The pipeline is of no use to Flint under the Flint River supply or KWA supply scenario. As part of the purchase agreement, language was included for emergency reconnection for Flint to DWSD through this water line.

GCDC water rates with DWSD are as follows:

	Fixed Monthly	Commodity
July 2013 – April 2014 (Flint Contract)	\$346,863	\$13.01
May 2014 – June 2014	\$423,400	\$15.18
July 2014 – June 2015	\$1,149,400	\$3.89
July 2015 – Present	\$900,000	\$11.86

As you can see, the fixed monthly fees and commodity fees have had significant swings. This is because under the Flint contract, only 40% of revenue was fixed. GCDC went to 80% and are now 60% for the current billing period.

Upon reviewing DWSD's letter of September 2015, DWSD went back to the 2013-2014 rate, added 4% for FY 14-15 and added approximately 11.3% for FY 15-16. This would create a water revenue requirement for a combined Flint/Genesee supply. In Section 1 d) of the letter, they state they would subtract GCDC current payments from that volume, leaving the amount to be paid by Flint. Remember, GCDC is paying the non-contract/non-customer penalty charges.

The reported rate would be \$662,100 monthly fixed and \$8.93/mcf commodity. Based on 15 million gallons a day and a 30 day month, the monthly charge would be:

$$\$662,100 + 15,000,000 \text{ gal} \times 30 \text{ days} \times 1 \text{ mcf} / 7,480 \text{ gallons} \times \$8.93 / \text{mcf}$$

$$\$662,100 + \$537,232.62 = \$1,199,332.62 \text{ per month}$$

Flint, over the last two seasons, has seen periods of water flow in the 20 to 25 mgd range due to water main breaks. This period has lasted 2 to 3 months. What is the additional cost if the monthly average was 21 mgd?

$$6,000,000 \times 30 / 7,480 \times \$8.93 / \text{mcf} = \$214,893.04 \text{ per month}$$

The only way for DWSD to provide water to Flint is a common meter at the county line and flow through a county water main. As previously stated, the Flint and GCDC have a contract regarding this potential circumstance (see 5.7 attached).

Assuming the fixed rate by DWSD is correct, the cost with the current commodity would be:

$$\$662,100 + 15,000,000 \times 30 / 7,480 \times \$11.86 = \$1,375,602.67$$

And again, with water main breaks, the additional monthly cost would be \$285,401.00.

Paragraph 1 d) of the DWSD letter recognizes this issue in the last sentence: "Depending on how water is provided to the combined GCDC/Flint customer, alternative rate structures may be appropriate."

We can back into that alternate rate based on our knowledge of the DWSD rate structure. DWSD wants 60% of its revenue from fixed rate.

		Volume per month
GCDC fixed	\$900,000	49,428 mcf
Flint fixed	<u>\$662,100</u>	<u>50,590 mcf</u>
TOTAL	\$1,562,100	100,018 mcf

Total commodity required is \$1,041,400

Rate based on volume \$10.41 would be the alternative rate

The adjusted rate for Flint would then be:

50% of fixed rate plus \$10.41 per mcf

$\$781,050 + \$15,000,000 + 30 / 7,480 \times \$10.41 = \$1,407,320$

And again, at this rate, the water main break situation could add \$250,508 per month

Therefore, Flint's expected bill for DWSD supplied water for a nine month period with 2 months of high flow would be \$13,166,896.

### **Procedure to Activate Supply**

1. Agreement with DWSD and common rate for joint GCDC/Flint water supply would be required. Agreement needs to include separate billings to Flint and GCDC, Flint to pay directly to DWSD based on meter readings at Baxter and Potter and Station 2 on Flint plant site. GCDC makes no representation to the water quality - that is between Flint and DWSD. The agreement needs a termination transfer protocol for Flint exiting and GCDC remaining.
2. Separate agreement with Flint: back up supply was anticipated on an emergency basis. Nine months to a year of service requires a more detailed agreement. Water outage due to line break and cost to repair, etc. The agreement needs a termination clause if Flint is still on DWSD when GCDC is ready to turn on its water treatment plant in the fall of 2017.
3. The 72-inch line will be required to be reactivated. This will require flushing, pressure testing, and BAC-T sampling.
4. Station 2 meter needs to be calibrated and GCDC will need access to control the valves and read the meters.
5. Flint needs to reactivate the Dort Reservoir.
6. Flint should perform a significant water flush of the distribution system just prior to the switch over.

### **Flint Distribution System**

The TTHM and lead issues here arising due to the water quality at the residential tap: Everyone agrees that the water leaving the water plant is clean, clear, and lead-free. At the residential tap, it has been shown to contain lead, is often brown in color, and has an odor. These are all indications of problems in the distribution system. The distribution system was built for a population of 250,000 people and major industrial use. Current population is below 100,000 and there is limited industrial use.

If Flint does not continue to make improvements/modifications to the distribution system, the problem at the residential tap will continue.

### Concerns

Will the lead sampling protocols change based on Flint's switch back to DWSD?

What happens to water treatment plant personnel during this 9-month period? Will they be laid off or carried as an additional expense?

When Flint switches to KWA, will the staff be capable of treating the water or will the learning curve begin again?

### What is the Desired Outcome?

It is the understanding of GCDC that all of the current samples that have been compiled at the Flint Water Treatment Plant have all tested within EPA and MDEQ guidelines. The emergency appears to be in the distribution of the water, which includes lead service leads to several residences located throughout Flint and not in the treatment of the water. As the treated water leaving the Flint Water Treatment Plant is within EPA and MDEQ guidelines, GCDC is confused as to what the emergency is at this time or why Flint would need to purchase water from DWSD. *The quality of the water leaving the Flint Water Treatment Plant is as safe to drink as the water that would be transmitted by DWSD to Flint.*

Given the facts as they have been provided to GCDC, if DWSD begins to supply Flint with water via GCDC, the elevated lead levels will not immediately disappear and Flint will be paying an additional million dollars plus a month over what it is currently paying to provide the same clean potable water to its residents. Additionally, by Flint receiving water from DWSD via GCDC, Flint will not be performing corrosion control measures on the DWSD treated water. This is important because once Flint begins to treat the raw water provided by KWA, the lead issue may resurface and continue until the corrosion control measures that will need to be restarted take effect, which GCDC estimates may take up to eight (8) months to establish the necessary film to separate the distribution system from the supply water.

The DWSD letter purposely pits Flint against Genesee County customers by offering a lower rate to Flint than is currently being offered to GCDC. And the delivery point is the same.

These are our quick thoughts on the matter. As time progresses, we will have more time to understand the issues and most likely additional concerns will present themselves.

Should you have any questions, do not hesitate to contact this office at your convenience.



WATER TRANSMISSION MAIN

ACQUISITION AGREEMENT

BY AND BETWEEN

CITY OF FLINT

AND THE

GENESEE COUNTY DRAIN COMMISSIONER AS COUNTY AGENCY

DATED MAY 30, 2014

approval, clearance, waiver, order or authorization of any person, organization, or entity; and (iii) do not conflict with, or result in any breach of, or default or loss of any right under (or an event or circumstance that, with notice or the lapse of time, or both, would result in a default), or the creation of any encumbrance pursuant to, or cause or permit the acceleration prior to maturity of any amounts owing under any indenture, mortgage, deed of trust, lease or other agreement to which the County Agency is a party, which failure, violation, conflict or breach would, in the aggregate, materially hinder or impair the consummation of the transactions contemplated by this Agreement.

- 5.4 Litigation. As of the Execution Date, there is no action, suit or proceeding pending or threatened against or affecting the County Agency before any governmental entity in which there is a reasonable possibility of an adverse decision which could have a material adverse effect upon the ability of the County Agency to perform its obligations under this Agreement or which in any manner questions the validity of this Agreement.
- 5.5 Due Diligence and Inspection. The County Agency acknowledges that it is being afforded the opportunity to conduct due diligence and investigation with respect to the transaction contemplated by this Agreement. The County Agency represents and warrants that it has conducted any and all such legal, factual, and other examinations, inquiries, investigations, and inspections, including conducting any tests, studies and examinations, that it, in its sole discretion, has determined necessary to complete such due diligence inspection to determine that the subject matter of this Agreement is suitable for the County Agency's intended use.
- 5.6 Environmental Matters. The County Agency represents and warrants that it has conducted any and all such legal, factual, and other examinations, inquiries, investigations, and inspections, including conducting any tests, studies and examinations, that it, in its sole discretion, has determined necessary to complete such due diligence inspection to have full knowledge of the environmental condition of the subject matter of this Agreement. County Agency shall enter into this Agreement subject to any and all environmental conditions present upon the subject matter of this Agreement.
- 5.7 Emergency Water Supply. The County Agency warrants that it will provide, to the extent the Detroit Water and Sewerage Department has available capacity treated water through the water main that is the subject matter of this Agreement in an emergency situation to Flint until such time as the Karegnondi Water Authority Water Transmission Pipeline construction is completed (which is estimated to be completed by May 2017) and the Karegnondi Water Authority is providing raw water to its customers.

The emergency supply of treated water to the Flint by the County Agency during the construction of the Karegnondi Water Authority Water Transmission Pipeline shall be at the prevailing rate and any additional charges, fees, special charges, and penalties, as billed by the Detroit Water and Sewerage Department to the County Agency.

If Flint shall need an emergency water supply after the Karegnondi Water Authority Water Transmission Pipeline has been installed and is operational, the County Agency will provide, to the extent the County Agency has available capacity, treated water through the water main that is the subject matter of this Agreement in an emergency situation to Flint. The emergency supply of treated water to Flint by the County Agency after the Water

Transmission Pipeline has been installed and is operational, shall be at the prevailing rate and any additional charges, fees, special charges, and penalties, if applicable, as billed by the Detroit Water and Sewerage Department to the County Agency.

## ARTICLE 6 COVENANTS OF FLINT

Flint covenants and agrees with the County Agency as follows:

- 6.1 Operation and Maintenance of the Water Main until Closing. Between the Execution Date of this Agreement and the Effective Date of this Agreement, Flint shall:
- a. Operate the Water Main in the ordinary course of business; and
  - b. Maintain all books and records relating to the operation of the Water Main in the ordinary course of business; and
  - c. Fix any known breaks or leaks in the Water Main, except those set forth on Exhibit F; and
  - c. Promptly notify the County Agency of any emergency or other change in the normal course relating to the Water Main (or communications indicating that the same may be contemplated).
- 6.2 Litigation and Claims. Flint shall promptly inform the County Agency in writing of any Claims of which Flint is or becomes aware that are or might reasonably be expected to become the subject of litigation affecting the Water Main or the transactions contemplated by this Agreement.
- 6.3 Notice of Changes. Flint shall inform the County Agency in writing if it becomes aware that any representation or warranty made by Flint in this Agreement has ceased to be accurate or if Flint becomes aware of the occurrence of any breach of any covenant or other agreement required by this Agreement to be performed or complied with by Flint.

## ARTICLE 7 COVENANTS OF THE COUNTY AGENCY

The County Agency hereby covenants and agrees with Flint as follows:

- 7.1 Cooperation. Subject to the terms and conditions of this Agreement, the County Agency shall cooperate with Flint to use its best efforts to secure all necessary consents, approvals, authorizations, exemptions and waivers from all persons and entities as shall be requested by Flint or required to be obtained in order to consummate the transactions contemplated hereby.
- 7.2 Litigation and Claims. The County Agency shall promptly inform Flint in writing of any claims (or communications indicating that the same may be contemplated) of which the County Agency is or becomes aware that are or might reasonably be expected

## *DRAFT – WORK IN PROGRESS*

### Protocol for Collecting Water Samples at Schools for Lead Analysis

The following is a detailed, step-by-step procedure to ensure samples are collected in a systematic, consistent manner to provide meaningful results. By following the below procedures school and health officials will have information to be able to identify and correct any sources that contribute lead into drinking water. The recommended procedures are:

- With the assistance from Department of Licensing and Regulatory Affairs (LARA) staff, conduct an on-site assessment of the building plumbing to prioritize sample sites.
- School staff collects the samples from prioritized sites and in the sequence recommended by LARA.
- School staff submits the samples and appropriate paperwork to the DEQ certified drinking water laboratory
- Laboratory performs analysis and informs DEQ-ODWMA staff of the results.
- DEQ informs DHHS of test results, and they jointly interpret the results.
- DHHS staff relays the results to school officials and confers on any follow-up or corrective remedies that may be needed.

#### Step 1 – Prepare for On-Site Assessment

In order to assist LARA staff to identify and prioritize sample sites, school staff should compile, collect, and review any records pertaining to the building plumbing. This includes building permits, plumbing permits, as built plans, and information about the service line and all potable water pipes, fixtures and appurtenances within the building. At a minimum, a diagram of each floor layout should be provided. In addition, answers to the following questions will help streamline the on-site assessment process.

- When was the facility built?
- Have new buildings or additions been added? If so, when were they added? If built since 1986, were lead-free plumbing and solder used?
- When were the most recent plumbing repairs made and where were they located?
- What are the potable water pipes in your facility made of and what is their location? Options include: lead, brass, copper, plastic, galvanized metal and other materials. What materials were used to solder the potable water pipes in your system? Are brass taps, fittings or valves used? Note the locations.
- How many of the following outlets provide water for consumption: Bubblers, ice makers, water coolers and kitchen taps. Note their location. Include taps that might be used for making coffee or preparing formula.
- What brands and models of water coolers (cooled drinking fountains) provide water in your facility and what is their location?
- Do faucets have accessible screens and have they been cleaned?
- Can you detect any signs of corrosion, such as leaks, rust-colored water or stains?
- Is any electrical equipment grounded to water pipes?

- Are there any records of previous water testing?

#### Step 1 – Arrange for On-site Assessment with LARA Staff

LARA staff will contact school officials/staff and set a date and time for the assessment. A school representative familiar with the building layout and plumbing system needs to accompany LARA staff as they conduct the assessment. A room reserved for records review should also be available.

#### Step 3 – Prioritize Sample Sites and Sampling Sequence

It is recommended that all faucets, taps and outlets that are used regularly by students and staff for drinking, cooking, making coffee or food preparation will be sampled. High priority sites would include:

- Drinking Fountains (both bubblers and water cooler style).
- Kitchen Sinks, faucets or taps.
- Breakroom, classroom, teachers' lounge or other sinks known to be or visibly used for consumption (water glasses or coffeemaker and/or cups are nearby).
- Bottled Water Dispensers
- Ice Makers

LARA staff will assign a sample site Identification (ID) number for each sample site and the order in which each site is to be sampled. This number will reflect the type of tap/outlet and location. Sites closest to the service line are to be collected first, then in a sequence as they get farther from the service line until the site the farthest away is sampled last. This will minimize the chance that the piping is not flushed by a downstream or other sample location prior to collecting the samples at that site.

#### Step 4 – Collect the Samples

After the sites and order of collection have been determined by LARA staff, the samples can be collected by school staff. While not a requirement, it is highly recommended that the samples be collected by someone with experience in water sample collection. In addition, make sure to inform all other staff including teachers, maintenance staff, parents and students of the sampling plans.

1. Three samples will be collected from each designated sample site. Therefore, obtain three, 125 milliliter (ml) sample containers for each sample site from the DEQ laboratory.
2. Collect all water samples before the building opens and before any water is used. Ideally, the water should sit in the pipes unused for at least 8 hours but not more than 18 hours before a sample is collected.
3. Do not collect samples in the morning after a vacation, weekend or holiday. These results will likely be higher because of the extended contact time with the water.
4. The three samples from each site are to be collected at first draw, after a 30 second flush, and a 2 minute flush as follows:
  - a. After the appropriate 8 - 18 stagnation time, place the first bottle under the tap, open the tap to produce a slow, steady "pencil thin" flow and fill the bottle to the appropriate level.
  - b. 30 seconds after filling the first bottle, fill the second bottle.
  - c. 2 minutes after filling the second bottle, fill the third bottle.

5. Make sure to not turn the faucet off or adjust the flow between samples.
6. Make sure to mark the bottles as "first draw", "30 sec flush" or "2 min flush" and also indicate this information on the sample submission form.
7. Assign an appropriate sample Identification (ID) number to each sample collected. Record this number (including the flush time) on the sample container and submission form.
8. Collect the remainder of the samples from all designated sites in the pre-determined order as recommended by LARA.
9. Deliver or ship the samples to the lab as instructed.

Step 5 - Laboratory performs analysis and informs DEQ – ODWMA staff of the results



Michigan Department of Environmental Quality  
Flint Water Response Team

DRAFT

Area(s) of Responsibility	Name	Liaison to/for Specific Project(s)
Director	Keith Creagh	Governor and Governor's Staff
Budget/Funding	Amy Epkey	Auditor General oversight State Budget Office Infrastructure Financing
Legislative	Maggie Pallone	Federal Congressional Members State Legislators
Communications	Melanie Brown Karen Tommasulo	Press contact (all) Press releases / social media Web pages (Eric Shaw) State Emergency Operations Center communications
Office of Drinking Water & Municipal Assistance (ODWMA)	Jim Sygo Kristina Donaldson (Warren - drinking water)	EPA Region 5 (Bob Kaplan) EPA Flint Safe Drinking Water Task Force Safe Drinking Water Technical Advisory Committee Eric Pecon - Project Manager, Revolving Loan Fund
State Emergency Operations Center Water Testing Program(s) Prepares Governor's weekly updates	George Krisztian	Flint Community Schools Superintendent, Bilal Tawwab Genesee County Health Department City of Flint (Mayor Weaver, City Administrator Henderson) Works with state agencies: DHHS → Hurley Children's Hospital DLARA
Governor's Flint Water Advisory Task Force	Madhu R. Anderson	Members of the Governor's Flint Water Advisory Task Force Infrastructure Financing

**EPA Contacts:**

Keith Creagh → Susan Hedman

Jim Sygo → Bob Kaplan

George Krisztian → Tom Burke

Mike Prysby and Steve Busch → Darren Lytle and Mike Schock

DEQ's ODWMA staff → EPA Region 5 staff, Jennifer Crooks and Tom Poy

**Flint FOIA Requests Coordinator:** Karen Shaler

**Office of Attorney General:** Richard Kuhl / Tracy Jo Devereaux (ODWMA)